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# THE CONDOR

A Magazine of Western  
Ornithology



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Number 2



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# THE CONDOR

A BI-MONTHLY MAGAZINE OF  
WESTERN ORNITHOLOGY

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VOLUME XXXV

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## TERNs AS DESTROYERS OF BIRDS' EGGS

WITH ONE ILLUSTRATION

By A. J. VAN ROSSEM

Everyone who has visited a sea-bird colony during the egg season has viewed with exasperation the depredations committed by gulls, particularly the larger species. Even the most sentimental pseudo-conservationist cannot but long for the means with which to blast out of existence the ever increasing surplus of cannibals which are making such inroads into our murrens, cormorants, and other species whose eggs are not placed out of sight underground.

Terns, though closely related to gulls, have pretty generally escaped the stigma attached to their larger relatives; but more than one writer has suspected them of being not so blameless as one could wish. Bent (*Life Histories of North American Gulls and Terns*, 1921, p. 209) says "It [the Caspian Tern] has been said to eat the eggs and young of other birds but I have never seen any evidence of this habit." Peabody (*Osprey*, 1, 1896, p. 3) strongly suspects that *Sterna forsteri* is no "white-winged angel" for he remarks that "... the character of this tern inclines me to think that he occasionally plays the cannibal". And finally the European Gull-billed Tern and the Caspian Tern are both said by Witherby (*Practical Handbook of British Birds*, 2, 1924, pp. 697, 700) to include in their diet the eggs and young of other birds.

So much for the reputation of terns in general. They have been suspected but, so far as I am aware, seldom proven guilty. During the summers of 1920, '21 and '22, a large part of my time was spent at Buena Vista Lake at the upper (southern) end of the San Joaquin Valley of California, preparing specimens and photographing the water-birds of the region. Two species of terns, the Forster and the Black (*Chlidonias nigra surinamensis*), breed commonly on this lake in such years as it contains any water, and a third, the Caspian (*Hydroprogne caspia imperator*) does so sporadically. The first two were under observation nearly every day, and the sum total of observations left no doubt whatever that the Forster Tern often destroys unprotected eggs and that the Black does so rarely.

In May, 1920, when I first arrived at the lake, the surplus flood from the Kern River was raising the level of the lake an inch or more a day and in the process thousands of acres of ripening grain were slowly disappearing beneath the water. The only plant which was able to accommodate itself to the constantly changing level was a species of polygonum, so that by July a more or less dense growth of this weed was flourishing everywhere in water less than three feet in depth. Underlying the growth of polygonum was a sodden layer of grain stalks, for the most part in

full head. In this tangle young carp, an inch or more in length, swarmed in unbelievable numbers.

All in all it is probable that never in the history of the lake had such an ideal combination of shelter, food, and nest sites been presented to such a wide variety of birds as were present that year. Forster Terns and Western Grebes were the



Fig. 7. FORSTER TERN ON APPROPRIATED NEST OF THE WESTERN GREBE.

Photograph taken July, 1921, at Buena Vista Lake, California.

commonest fish-eating species present. The two occupied together a patch of flooded grain and polygonum perhaps a mile long by half a mile wide in shallow, two-foot-deep water near the north shore, and their nests were scattered at intervals of a few feet throughout this area. For the most part the terns laid their eggs in appropriated nests of the grebes, or sometimes on windrows of fallen grain. In the cases of appropriated grebes' nests it is likely that they were taken over during the absence of the original owners in intervals between egg layings, for no nest which held more than one grebe egg was so usurped. (See fig. 7.) The point to be made is that in this mixed colony no egg destruction was ever observed.

The terns' nesting was confined to the area described, but they did not feed there. The growth was too thick, and open water, except for winding channels which marked the location of former roads, was too limited for good fishing. For food they repaired to a comparatively open, shallow area some two miles to the eastward, where young carp of suitable size were particularly abundant, and all day long a succession of birds could be seen passing back and forth between the nesting and feeding grounds. In this feeding area was another colony of grebes whose grain-stalk nests showed up conspicuously in the absence of protecting cover. Many of

these nests were raided by the terns, not systematically as gulls would have done, but in a more or less haphazard manner. Many nests were not molested at all; others had every egg broken or rolled into the water, while in others only a single egg would have a hole pecked in the side and its contents puddled about the nest.

That species other than grebes occasionally suffer is probable, though no instance was observed. A tern which alighted on a coot's nest was promptly chased off by the flustered parent, who skittered up from some 50 yards distance, although two people were standing close to the nest at the time. Whether or not this particular tern had designs on the eggs is secondary to the fact that the coot regarded it as an enemy.

No depredations by Forster Terns were noted in 1921, possibly because both grebes and terns were less numerous that year, and possibly because I was occupied with other species. However, one instance, in which as usual the western grebe was the victim, was noted on July 22, 1922. Possibly there were others, but, if so, they were unrecorded.

Certainly egg destruction by Black Terns is rare and I saw only one instance of it. I had never seen the slightest evidence that Black Terns were in the least degree interested in the eggs of other species and therefore was very much surprised to witness not one but three of these birds break a Pied-billed Grebe's egg. My notes for June 11, 1921, record the circumstance as follows: "Found a Pied-billed Grebe's nest containing one fresh egg which was well covered. I neglected to replace the covering, and before I had gone more than a few steps the egg was pounced on and eaten by three Black Terns". Certainly if a dog is legally entitled to one bite, a Black Tern is also, and one cannot condemn it on an isolated and unquestionably exceptional circumstance.

Why raids by Forster Terns on the eggs of other species were conducted outside of the nesting area, while within it no destruction was ever noticed, is probably a matter of psychology. The terns were on the fishing ground for one purpose only, the procuring of food, and that unguarded eggs are sometimes included in this category was demonstrated on many occasions. On the other hand, eggs and nests, within the breeding area, are evidently regarded with a good deal of tolerance regardless of whether or not they belong to their own species. So many instances of multiple layings in a single nest were observed that one is forced to the conclusion that many birds are extremely casual as to where they deposit their eggs. "Sets" of as many as five eggs were noted which were clearly the products of two and even three birds, and the various stages of incubation in such sets showed that the extra eggs had been laid long subsequently to the initial set. This communistic tendency, if one may so refer to parasitism on their own kind, is suggested as a reason for the immunity from destruction of the grebes' eggs within the area in which the terns were also nesting.

*California Institute of Technology, Pasadena, December 9, 1932.*

## WINTER BEHAVIOR OF TWO SEMI-ALBINO WESTERN ROBINS

By JOHN B. PRICE

The fact that each pair of Eastern Robins has its own feeding territory about its nest *during the nesting season* is now well known (Butts, Auk, XLIV, 1927, p. 329). The same is in all probability true of the Western Robin (*Turdus migratorius propinquus*), although as robins rarely nest on the Stanford University campus the writer cannot definitely so state. Also well known is the fact that robins form large flocks after the breeding season and that thousands of these birds roost night after night in certain groups of trees, leaving each morning to fly miles to forage and returning to the roost each evening. Previous to last year the writer had always supposed that each morning the robins spread out in haphazard manner over the surrounding country, shifting from place to place during the day and from day to day. It seemed unlikely on the face of it that *during the winter season* each individual robin should have an individual feeding territory. In any case there seemed little chance to learn much about the robin movements at Stanford as these birds do not enter the bird banding traps and so cannot be marked for individual study by stain or by colored bands.

It was with great interest therefore, on January 19, 1932, that the writer observed a semi-albino robin with a flock on the lawn in front of Jordan Hall. The bird (in this paper called White-head) had conspicuous white spots on the head, back and breast which served as identification marks. The writer hardly expected to see it again; but to his surprise he observed it every day for over a month, from January 19 to February 23 (except on February 6, 7 and 8). A strange fact was that it was always on the Jordan Hall lawn, and during the month of observation it was never once seen on the neighboring lawn in front of the Psychology Building although about fifty other robins regularly foraged there. Furthermore, it was always seen on the middle portion of the lawn, occasionally going into the bordering bushes. This feeding territory had an area of about 400 square yards and the bird was never observed to feed elsewhere.

The robins paid but little attention to persons crossing the lawn, only moving a few yards out of the way and continuing their search for earthworms, and if too hard pressed going into the bordering bushes. The writer once tried to drive White-head on to the other lawn but did not succeed. The robin kept about ten yards ahead of him as he walked after it but doubled back upon reaching the boundary of its territory. Finally the writer ran at the bird which then flew up in a nearby tree; but in two or three minutes it came down to the same portion of the lawn. In its flight, feeding, and everything except color it seemed in all respects to be normal.

About fifteen other robins fed on the same lawn as White-head and about fifty on the Psychology lawn. It was difficult to count the exact number or to be sure this was the same day after day, as some of the birds were always in the nearby bushes. The white-headed robin did not have exclusive possession of its portion of the lawn. A few other robins fed there but they were never very close together. If another robin approached too closely, White-head would drive it a few yards farther on. On February 12 instead of the dozen or so there before, over fifty robins were seen on the Jordan Hall east lawn. The newcomers may have been previously feeding on berries in the nearby oval and moved to the lawn when the berries were exhausted. Many of the newcomers were in White-head's territory and it was very vigorous in combating them. During a three-minute interval in the late afternoon it was

observed to combat ten times. Usually the opponent would retreat a short distance as soon as White-head rushed at it; sometimes both flew up in combat; but in every case White-head was successful. In a few days the number of robins on the Jordan Hall east lawn was once more only about a dozen.

So far as known, robins in winter do not roost at night on the Stanford Campus. They fly in large groups each evening southwest toward the Santa Cruz Mountains. On January 27 the writer attempted to locate their roosting place by following the birds by automobile. Of course it was not possible to follow the same group all the way, but after one had passed ahead out of sight another group would pass overhead going in the same direction and so on. The birds were traced as far as Searsville Lake, four miles by air line from Stanford. Darkness prevented following farther, but in all probability they had a typical roost near the top of the mountains.

It was not possible to be absolutely sure that White-head flew off the campus with the other robins, since each evening it would fly up with a group to a thick tree. The birds would perch there two or three minutes and then fly off. White-head could not be distinguished from other robins when flying at a distance, so it was thought just possible that it formed an exception and remained behind in the thick tree. The writer hesitated to believe that it took a four-mile flight every morning and evening and came back to the same spot. However, more light was shed on this point by the writer's fortunate discovery of a second part-albino robin which was seen near the Stanford Basketball Pavilion. This robin had the tail entirely white and in addition had white feathers in the wings. It was even more conspicuous than the other bird. White-tail was seen at the same place for seven days from February 12 to February 18. How long it may have been there before is not known. White-tail's territory was the small lawn and adjacent bushes at the west end of the Basketball Pavilion, an area of about 300 square yards. It was observed there at various times from before sunrise to half an hour after sunset. Only one other robin shared the west lawn with it, feeding in the south corner and more often being across the road on the south lawn where about eight other robins were usually to be found. Only once was White-tail observed on the other lawn. This was when the writer frightened it up a tree. It stayed there a minute and a half and then flew down to the south lawn. At once another robin rushed at it and without staying to fight it went back to its own lawn.

As so few robins were nearby it was possible to watch definitely White-tail's individual flight in the evening. This was done twice. The first time White-tail flew to the top of a tree about half an hour after sunset, then to a wire and then flew off until it disappeared from view even with six-power field glasses. The second evening the same thing happened except that three other robins from the nearby lawn flew with it. In each case it flew high in the direction of Searsville Lake until out of sight. In both cases it was observed back on the pavilion lawn the following morning.

White-tail was last seen on February 18. The next day two other robins were in its place on the west lawn. Thus it seems that the presence of White-tail had kept the other robins away before, since they at once took over the territory.

The question at once arises, does each individual robin in winter have its own territory, feeding there day after day and flying several miles to roost each night, and perhaps changing its territory from time to time during the season upon depletion of the food supply in an area? This seemed unlikely on the face of it as robins are irregular in their occurrence, some years being much more numerous than others. Besides, other flocking birds such as the California Quail and Puget Sound White-

crowned Sparrow have other habits. The flock as a whole has a territory but the members of the flock mix up indiscriminately feeding in all parts of it (Price, Condor, xxxiii, 1931, pp. 3-7, 238-242). Only extensive marking experiments can settle this problem, and as before stated the writer has not been able to trap robins at Stanford. However, it does seem improbable that in the case of *two* robins (each apparently differing from normal birds only in appearance) *both* should be abnormal in flocking behavior.

SUMMARY: Two semi-albino robins were observed during the winter season at Stanford University, California. One was observed daily on the same lawn from January 19 to February 18 with the exception of three days. The other was observed on another lawn from February 12 to February 18. Each night they flew away (in all probability four or five miles) to roost and returned to the same small areas before sunrise the next day. This suggests that each individual robin in a flock may have its own individual territory during the winter season.

*Stanford University, California, September 19, 1932.*



## RELATIONS BETWEEN MAN AND BIRDS IN CALIFORNIA

By TRACY I. STORER

The interrelations between man and birds have become numerous and varied. Birds of some kind or another occupy all portions of the earth inhabited by mankind, so that it is literally true that man is never without his bird associates. Birds are active by day, and attract attention by their size, coloration, voice, or movements, whereas many other living creatures are less conspicuous because of their small size or retiring habits. Birds therefore constitute a normal part of man's environment, and their relations to him are in general as intimate as those of any other living creatures. It may prove of interest to analyze these relations, especially as they apply to mankind and birds in California.

The interest of the Indian in birds was highly utilitarian: He regularly levied upon such species as afforded him material for food, bodily covering, or adornment. In his elementary state of knowledge, lacking scientific explanations for the true causes of natural phenomena, he attributed supernatural import to certain large or conspicuous animals and birds—witness many of the legends of our native Indians.

As the human race has proceeded in mental development, its interest in birds and relations with them have become more intimate. The leisure which has come with bettered efficiency, through the invention of labor-saving devices, has allowed opportunity for cultural advance, with development of other interest in birds. We may now recognize that birds are of importance to human society (1) for esthetic reasons, the observation, study, and appreciation of birds giving pleasant and intellectually profitable employment to our leisure, as is indicated by the host of bird students among Caucasian populations; (2) as food for persons far removed from settled communities and for certain native races; (3) as objects of pursuit for sport, a manifestation of the primeval necessity for providing food, now more or less sublimated into a contest in which the hunter, especially he of true sporting caliber, pits his skill against the natural efforts of birds toward self preservation; (4) by reason of competing with man for the results of his labor and effort in agricultural operations, where closely spaced crops of plants, producing materials acceptable as food for birds, are grown in new areas or as replacement for native plants; and (5) as agencies in the dissemination of disease.

Our historical record does not indicate the effect of the Indians on their bird associates, but there is little if any information to show that they ever seriously altered the populations of wild birds. The weapons used were relatively crude; but, more important, the Indian population was never large, because of the limitations imposed by warfare, disease, and periodic food shortage. Merriam and Kroeber indicate the Indian population of California, a century ago, as not exceeding 260,000, which is to be contrasted with about six million human beings, or 23 times as many, in California at the present time.

Early travelers in America, east or west, commented on the large populations of native animals—rodent, ungulate, and carnivore among mammals, and of quail, ducks and geese, waders, hawks, and other large and conspicuous birds. Lacking definite information we may infer that in early days small birds were present in numbers appropriate to the food supplies and habitats then afforded.

An early conspicuous activity of "civilization" in California was the killing of birds for food. The early newspapers, the written accounts of early naturalists and settlers, and the verbal statements of old-time residents all attest the number and



variety of wild species which were available and which were taken for food and offered for sale in markets. Although statistics are scarce, the scattered evidence indicates that an enormous commercial traffic existed for upwards of 60 years, being checked by law only when evidence for depletion was overwhelming. In fact, hunting of wild game for market purposes was legal until 1915, and is even practiced today outside the law.

No particular criticism can be attached to those who early engaged in these practices, although a more enlightened consideration might have been expected near the turn of the century when the disastrous effects of overhunting, lengthy seasons, and sale of game were becoming evident. The enormous draft on the wild species, despite their seemingly limitless ability for replenishment, eventually has shown its effect, particularly with better weapons, improved facilities for reaching hunting grounds, and the larger hunting population. The right to hunt game freely and easily has been considered an almost inalienable part of the birthright of every citizen in America. The drain on wild game continues, with nearly a quarter of a million licensed sporting hunters in California alone. Artificial methods for replenishment of the game bird supply now occupy an important fraction of the energy and funds of official and private agencies in attempts to build up and maintain stocks adequate to hold the interest of hunters to the point where they will continue to expend money for licenses, guns, ammunition, and other sporting paraphernalia. Market and sport hunting has, however, been directed at only a limited part of the bird population. The majority of bird species of smaller size have never been considered as game by our hunters, although levied upon to a limited extent by small boys and by aliens from countries where the term "game" embraces a wider range of species than in America.

Occupation of California by the white man has altered the conditions for existence of wild birds by changing the environment in ways both favorable and unfavorable. Most bird species are relatively inflexible in their habitat requirements. It is axiomatic that the habitat is more basic than the occupant. In a given ecologic complex only certain species can exist successfully; if the habitat is altered, the bird complex changes. Man's alteration of bird habitat has consisted of deforestation; of removing chaparral and other shrubby growth; of afforestation on barren areas; of planting trees, vines, herbaceous plants and grasses in close spacing over extensive areas, in substitution for forest, brush, or grassland; of the drainage of swamp lands, river bottoms, and lakes; of the husbanding of stream and winter flood waters in reservoirs to be applied as needed to crop lands; and of the carrying of irrigation water to lands originally desert or semi-desert in character. All of these measures have resulted in alteration, elimination, or substitution of bird habitats. This statement applies not only to unsettled regions and to farm lands, but to urban areas as well, where houses, with their decorative trees, shrubs, and vines afford substitute nesting habitats, and where the plant cover gives new forage habitats and food supplies.

Specifically, the removal of forest trees eliminates the strictly forest-dwelling birds such as woodpeckers, creepers, warblers, nuthatches, and glade-nesting thrushes. A new successional cycle of plants is initiated; in the Sierras of California this seems to involve in turn brake, blackberry, chaparral, deciduous forest, and probably only after all of these a return to the original coniferous forest climax. Fox sparrows, green-tailed towhees, and mountain quail are favored in the earlier stages of this altered condition. Clearing of chaparral from foothill areas removes cover for Bell sparrows, wren-tits, and California thrashers. Removal of blue oaks takes the nest-

ing habitats of gnatcatchers, bush-tits, plain titmouses, bluebirds, and California jays. Replacement of native foothill plants by orchards or vineyards may offer substitute nesting places for valley quail and mourning doves.

Linnetts are accommodated by orchard trees for nesting. Flat open valley floors or plains once covered by grasses and herbs—the original forage areas of elk and antelope—were also tenanted by other, smaller mammals, and among birds by meadow larks and horned larks, besides being the winter forage grounds for geese, cranes, mountain plover, and other species. Planting of a seasonal crop of cereals on these areas still affords appropriate habitat for such birds, with enhanced forage potentialities for them and for other species as well. Development of deciduous fruit orchards on lowlands and in foothill areas has afforded supplies of moist, pulpy fruits in the long, dry summer season for linnetts, grosbeaks, mockingbirds and orioles, and of buds serving in part as winter and spring forage for linnetts and purple finches and, locally, of the crowned sparrows. Nut-bearing trees provide seasonal food crops locally for crows and certain woodpeckers. Young vegetable plants, notably lettuce and beans, provide acceptable forage for linnetts, horned larks, and crowned sparrows, while the early stages of certain garden flowers such as sweet peas, delphinium and stocks are eagerly taken at times by wintering populations of crowned sparrows. Berry-producing trees and shrubs supply new and increased forage for robins, bluebirds, thrushes and waxwings. Lessening the number of predatory mammals releases pressure on certain birds, while rodent control removes the normal food supply of hawks and owls.

Commercial plantings of field and truck crops, vines, and fruit and nut-bearing trees have been subjected to attack by birds from the early days of agriculture in California. The interpolation of an increased food supply, especially through the dry summer season, has, to use a stockman's expression, "increased the carrying capacity of the range", for birds. In the Imperial Valley the bringing in of irrigation water has transformed portions of a dry desert into an area for intensive production of grain, pasturage, and green table vegetables. This has enormously increased the forage possibilities for blackbirds, horned larks, linnetts and, in winter, for ducks. The planting of a hundred thousand acres of rice with attendant cat-tail growths along canals has greatly enlarged the forage and nesting habitat available to blackbirds. The placing of irrigated orchards and vineyards on dry plains in the lower San Joaquin Valley has improved opportunities for mockingbirds where once lived horned larks. In the lowlands, development of artificial grassland, namely lawns, and of orchards repeatedly irrigated, has provided summer forage areas for the robin, and this species has, locally, become a member of the lowland summer avifauna within the past two decades. In many places the local populations of birds at nesting time, and in winter as well, have been augmented by the altered forage and shelter resulting from man's intervention.

In some places and at certain times the competition by birds for agricultural products has assumed serious proportions. Efforts at checking this competition date at least from the 80's. On some areas damage of serious nature has occurred only at long intervals, whereas in other places it has been of regular occurrence. The means employed to combat this damage have been as varied as human ingenuity could devise. Screening by cloth or wire, use of scarecrows, small windmills, poisoned water or food, as well as the provision of fresh drinking water, and the planting of counter-attractant crops, have all been tried.

Many individual records have been published of birds killed by poisoned cereals distributed to control ground squirrels, but that such deaths occur in numbers suf-

ficient actually to alter permanently the local populations of the bird species concerned has not been demonstrated as yet.

Use of chemical poisons to combat insect competitors for agricultural products has restricted in some degree the potential forage of insectivorous birds and, at times, has resulted directly in the deaths of birds. Closely planted field, vine, and orchard crops present potential forage area for the growth of large numbers of insects, but persistent and extensive spraying and dusting with chemicals keeps many of these species within narrow limits. Nocturnal fumigation of citrus trees with hydrocyanic acid gas under tents to control insect pests results in death of some birds. Orchards in general by reason of control operations do not afford the birds insect forage comparable with the amounts on native or unguarded trees.

The repeated pruning of trees and vines results in artificial conformation of open character suited to easy tillage and the early ripening and easy harvesting of fruits, but does not permit these plants to assume the dense, well-shaded growth forms best suited to nesting harbor for many species of birds.

Clean cultivation of fence margins, field corners, and roadsides, as practiced primarily against alien plant species—weeds—to reduce the competition with crop plants and to restrict available hosts for fungous diseases and insect pests, incidentally goes far in restricting the seed crops of these plants which otherwise would be available for finches, sparrows, and other surface-gleaning birds.

Telephone, fence, and other poles afford substitute perching, and in some instances nesting, places for hawks, shrikes and kingbirds, replacing scattered trees formerly used. Trees about farmhouses and in towns give greater harbor for linnets and the introduced English sparrow, while farm buildings and bridges have probably increased the total available nesting sites for cliff and barn swallows.

Oil pools originally occurred in a few localities and served as death traps for a variety of birds. Development of the petroleum industry has increased the number of such pools, bringing some increased danger to birds. Oil wells along the ocean front and the pumping of oil-laden ballast water from tank steamers returning to our ports for a time caused losses among sea birds, but this menace is now largely eliminated by splendid cooperative effort on the part of the oil distributors, at the suggestion of bird-protective organizations.

The control of surface water by man in California has grossly altered the available habitats for many birds. Originally the Sacramento-San Joaquin Valley had vast areas of "swamp and overflowed lands", where winter flood waters remained to evaporate or drained slowly into the rivers, but meanwhile afforded extensive aquatic and semi-aquatic habitats. These are now far reduced in area. Levees now restrict winter flood waters to river channels or by-passes, resulting in rapid runoff to the sea. Several major lakes were present, including Buena Vista, Tulare, Lower Klamath, Tule, Goose, and Honey lakes. All of these save one are now dry, and several minor lakes are gone as well. Climatic pulsations have combined with agricultural practice in bringing about these alterations. Irrigation does not duplicate original conditions with respect to necessary water relations for certain groups of birds. Large acreages of cat-tail and tule swamps and of tree growths along or near water courses and lakes have disappeared, thereby reducing in amount the breeding places for ducks and herons. Although substitute growths of tules and of small trees occur along many irrigation canals, the total acreage of such habitat has obviously declined. The Salton Sea has afforded an alternative habitat for small numbers of a few species. Irrigation and hydro-electric reservoirs do not often afford

appropriate or adequate substitute habitat for palustrine birds. The ponds of duck clubs, earlier of intermittent character, are now being placed on a permanent basis in an attempt to increase the available habitat in which ducks may nest.

The rate of change in conditions for bird species has varied in different localities and habitats. In some instances, as with clearing, the alteration has been slow, but in the aggregate involves considerable areas. Changes in water relations, especially in respect to annual crops has been more rapid, as with development of rice growing in the Sacramento Valley where large acreages were transformed from barley fields to flooded rice checks within a single year, bringing immediate alteration in the habitat and consequently in the species of birds accommodated.

Legal protection of one sort or another has been accorded most species of birds for many years. A few have definitely been denied this protection, including the English sparrow, California linnnet, crow, black-billed magpie, bluejays, blackbirds, shrike, horned owl, sharp-shinned, Cooper and duck hawks, and more recently the white pelican and the cormorants. None of these seem definitely to have suffered in numbers because of this lack of legal protection, despite campaigns which have been directed against certain of them. Numbers, habits, adaptability in ecologic requirements, success in rearing broods under adverse conditions and other factors play different roles with these species in their success in thus surviving the legal ban. On the other hand, the broad-winged group of hawks has declined, despite legal protection, chiefly because their natural habits place them where easily shot by ranchers, sportsmen, and Sunday shooters acting on mistaken premises. A few bird species have been levied upon rather heavily by "oologists."

Introduction of aggressive alien species, notably the English sparrow and ring-necked pheasant, has brought competition to some native species. About dwellings, various native birds would perhaps be more abundant were the English sparrow not present; whether the factor of competition is physical or psychological in nature is not altogether evident. Valley quail would perhaps occupy certain damp bottomlands in greater numbers if not subjected to competition by pheasants. The actual interspecies relations of these two are not yet clearly understood.

The part of birds as disease vectors is too little known to be more than mentioned at present. Whether our wild birds and the domestic gallinaceous birds may exchange parasites is practically unknown here. The spread of animal diseases such as anthrax and hog cholera by vultures has been suggested, and small birds have been mentioned as carriers of fungous diseases of trees, but all information to date seems to show other agencies as more important. The indiscriminate importation of alien birds by game agencies and bird fanciers affords far greater opportunities for establishment of objectionable parasites. Changes in water relations have probably been somewhat of a factor in the western duck sickness now known to be a type of botulinus infection.

In brief, then, the white man has grossly altered certain parts of the avifauna of California in many ways and over considerable areas. A limited number of species have been far decreased, while others have profited notably by human intervention; but there remain many species whose status has not changed, and on vast areas on the deserts, in the foothill country, and in the mountain forests the bird population is in large degree as it was in the time of the Indians, and will doubtless continue in that condition for a long time to come.

*Division of Zoology, College of Agriculture, University of California, Davis, California, September 6, 1932.*

## A YEAR'S STUDY OF HOUSE FINCH WEIGHTS

WITH TWO CHARTS

By J. L. PARTIN

March 27, 1932, culminated a year's effort in the weighing of House Finches (*Carpodacus mexicanus frontalis*) at 2151 Balsam Avenue, in the Westwood section of Los Angeles. Over 1000 weighings were made of 800 individuals during the year. Every month is represented except August. Our absence from the station and the extreme scarcity of birds in August are the reasons for this gap. Each bird weighed was banded with a U. S. Biological Survey band.

The purpose of this work was to gather sufficient accurate data on the weights of House Finches to enable us to determine whether there were any marked tendencies for these weights in the aggregate to be influenced by the seasons, the time of day, and the sex and the age of the bird. We were able to devote only week ends and holidays to trapping, yet we feel that sufficient samples were taken to give fairly accurate cross-sections of House Finch life.

The balances used had a sensitivity of one-tenth of a gram, and the set of weights was calibrated by the Los Angeles County Department of Weights and Measures, so that it is reasonable to suppose that the weighing apparatus was accurate enough for our purposes.

We were given helpful suggestions by Mr. Harold Michener early in the study. He suggested that we confine each bird in a dark box for weighing, a plan which was highly satisfactory. The first box used was a cardboard carton, which was early discarded because of its annoying habit of changing its weight with the relative humidity, as much as 1.5 grams in twelve hours, or approximately 7% of the weight of a House Finch. This, of course, necessitated weighing the box after every weight taken, making the time required for each bird excessive. We remedied this inefficiency by making a box 4 x 4 x 8 inches out of 32-gauge sheet aluminum, and counterweighting it so that the weights on the pan indicated the weight of the bird directly. Another precaution taken was to feed the birds only on the days of trapping, so as to give as little artificial food supply as possible.

The territory for a radius of about two miles around the trapping station was, up to six or eight years ago, grain fields for pasture. Consequently, the vacant lots, about 50% of the subdivided land, are covered with wild oats, mustard, radish, etc., during about 75% of the time.

First, the data were investigated for any seasonal influence. To this end, the weights were segregated according to months for the females, males and immatures. These were then averaged, giving a value for each month. Figure 8 is a graphical representation of these values. From April to July the female weights were consistently above those of the males. From July to November there was no consistent superiority of either sex, the combined average being practically constant and relatively low. These periods embrace the breeding and molting seasons. Beginning in December there was a surge upward, reaching a maximum in February. During this phase the male weights were the greater.

In May we had our first immatures, which were about the same in numbers as the adults. Their average weight was 95.5% of the average adult weight for the month of May. In June the same condition continued as to numbers of adults and immatures, but the immatures dropped off about 3% in weight, making their average only 92.8% of the average adult's. In July the immature average jumped



back to 94.8% of the average adult weight for the month, and in September their average climbed to 98% of the average adult weight. To speculate, it seems reasonable to conclude that the drop in weight in June was due to the adaptation of the youngsters to their own support; and finally that by September, the last month of a recorded immature in our notes, the young had about grown up, being only 2% below the average adult weight for the month.

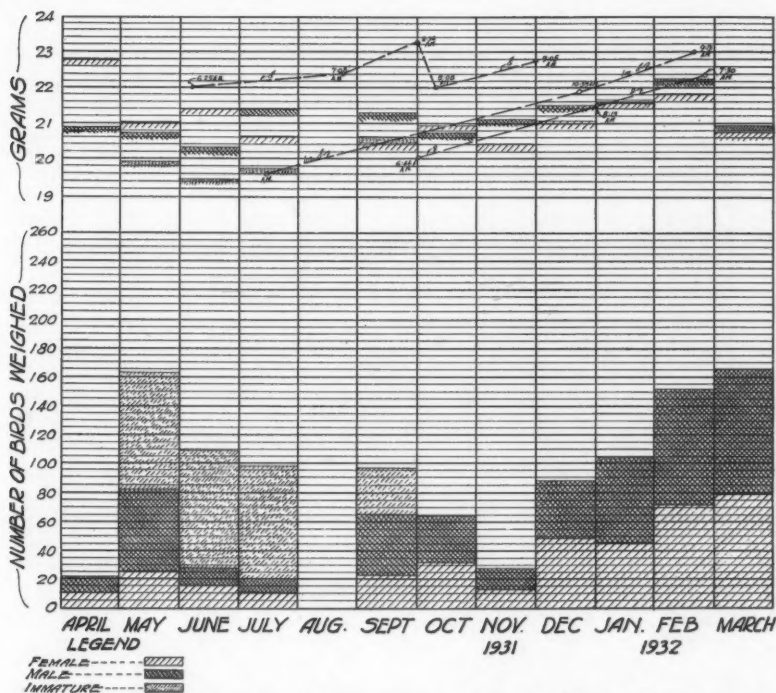


Fig. 8. CHART SHOWING SEASONAL VARIATION IN WEIGHTS OF HOUSE FINCHES, BASED ON ONE YEAR'S RECORD. ALL THE BIRDS WERE CAPTURED AT 2151 BALSAM AVENUE, LOS ANGELES, CALIFORNIA.

Three individual records, chosen because of the close agreement in the hour of weighing in each case, have been plotted on figure 8 also. These emphasize still further the low and high for summer and winter, respectively.

The data were arranged according to hour of day of weighing. For the sake of facility only six periods were recognized: Forenoon 6 to 8, 8 to 10, and 10 to 12; afternoon 12 to 2, 2 to 4, and 4 to 6. The averages for the six periods are shown in figure 9. Here we find the male and female curves ascending fairly uniformly until mid-day. There the curves cease their good behavior and zigzag across each other for the rest of the day. The heavy broken line was drawn through the average of the male and female weights for each period, and indicates a maximum for the day occurring in the 2 to 4 p. m. period. But in fairness to the 4 to 6 period

it might be explained that the December and January captures for this period, because of the early nightfall, were practically negligible. Since birds trapped during the other periods of these months were heavier than for previous months, it seems possible that had the 4 to 6 period received a more proportionate share of weights for these months the average might have been higher. A comparison of the adult and immature curves indicates the latter to be the reverse of the former; that is,

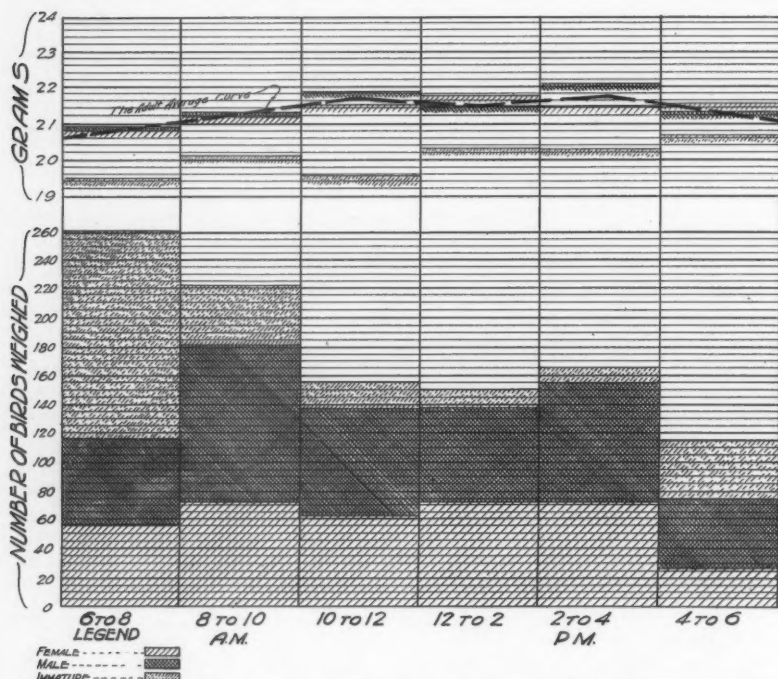


Fig. 9. CHART SHOWING HOURLY VARIATION IN WEIGHTS OF HOUSE FINCHES, BASED ON ONE YEAR'S RECORD, FROM APRIL, 1931, TO MARCH, 1932. ALL THE BIRDS WERE CAPTURED AT 2151 BALSAM AVENUE, LOS ANGELES, CALIFORNIA.

the morning weights of the immatures are erratic, while in the afternoon there is a fairly consistent gain with time, the maximum occurring during the 4 to 6 period. Further, it may be seen that the 6 to 8 a. m. average of the immatures was 19.48 grams or 93.4% of the adult average, 20.85 grams, for the same period, and that the immature maximum of 20.46 grams was 94.8% of 21.58 grams, the adult maximum.

The location of the trapping station as another possible influence upon bird weights is indicated by the following experience: On February 22, 1932, we weighed the birds captured at the Michener station at 418 North Hudson Avenue, Pasadena. Sixteen House Finches were among the captives, six females and ten males. On the previous day we had, by coincidence, weighed sixteen House Finches at our own station. A comparison of these weights shows the Pasadena House Finches about



7% lighter than those of Westwood. The two days' weighing does not necessarily establish the fact, but it does seem to indicate a possible tendency toward regional variation.

To summarize the whole problem, we feel safe in concluding that:

1. There is a seasonal variation in the weight of the House Finch; the minimum average for adults occurs during November, and is about 93.7% of the maximum, which occurs in February, while there is a tendency for a low average weight all along from May to November.

2. Immatures average lightest in June, being about 92.8% of the adult average for that month, and reach 98% of the adult average weight in September.

3. There is a daily variation in the weight of the House Finch, with a decidedly uniform increase for adult birds during the morning, breaking away from a smooth curve in the afternoon, but reaching a maximum during the latter period. The average daily fluctuation for the adults amounts to about 3.5%.

4. Immatures are more erratic in weight in the forenoon but tend toward a smooth curve in the afternoon, reaching a maximum near the close of day, with a differential of about 5% between a. m. and p. m. weights.

5. The females average heavier during the breeding season than the males, while the males are heavier during the pre-nuptial season, November to March.

6. There is a strong indication that territorial variations occur in bird weights, possibly because of variations in food supply, or in hereditary influences, or in both.

A copy of Dr. Jean M. Linsdale's report on Variations in the Fox Sparrow (*Passerella iliaca*) with Reference to Natural History and Osteology (Univ. Calif. Publ. Zool., 30, 1928) has come to our attention since this paper was first prepared, and it is interesting to compare observations regarding weight variations of the two species.

Linsdale says that female Fox Sparrows on the average, irrespective of age, season, or locality, are about 98% as heavy as the average male. We find that female House Finches, irrespective of season or time of weighing, are about 99% as heavy as the average male.

He also observes that the female Fox Sparrows tend to be heavier than the males during the breeding season. On this point we again find the two species in accord. See figure 8, months of April, May and June.

Linsdale further observes that the age of Fox Sparrows more than one month old is apparently of little importance in influencing weight. On this point we have insufficient data for individual birds to be conclusive, but basing our judgment on averages for immatures we would say that more than a month is necessary for the House Finch to acquire its mature weight.

With regard to our own study, we wish to acknowledge helpful suggestions derived from articles by Mr. C. L. Whittle, of Massachusetts, in volumes II, III, and IV of the Bulletin of the Northeastern Bird-banding Association, on bird weights. We found on article by Dr. W. H. Bergtold (Auk, xxx, 1913, pp. 65-69) on weights of House Finch nestlings most instructive. We are much indebted to Mr. and Mrs. Harold Michener for their stimulating advice. And especially do we wish to say that the investigation was one of interest to the late J. Eugene Law, receiving every encouragement from him up almost to the time of his death.

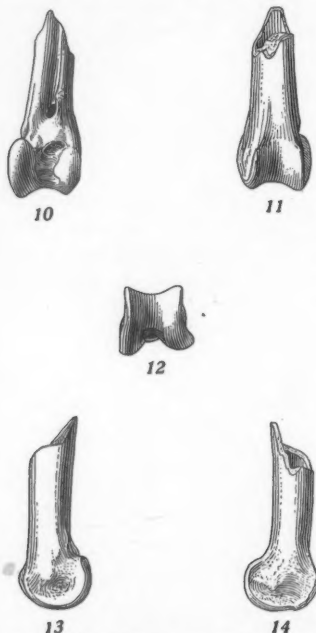
*Los Angeles, California, December 4, 1932.*

# A FOSSIL GALLINACEOUS BIRD FROM THE LOWER MIOCENE OF NEBRASKA

WITH FIVE ILLUSTRATIONS

By ALEXANDER WETMORE

Among some fragmentary fossil bones forwarded for study by Mr. Harold J. Cook of Agate, Nebraska, there is included a distinct form of the family Cracidae, accompanied by remains of an eagle that may not be identified. According to notes supplied by Mr. Cook he obtained these bones at different periods from July, 1929, to October 15, 1931, in the large quarry of the Agate Springs fossil deposits on the southwest side of Carnegie Hill, the specimens being exposed on the quarry floor following high winds that carried away loose earth and dust. The material comes



Figs. 10-14. FIVE VIEWS OF TYPE SPECIMEN OF  
*Ortalis tantala*, TWICE NATURAL SIZE.

from the Lower Harrison formation of the Lower Miocene and is all well fossilized. The specimens are preserved in the Cook collection at Agate, Nebraska. The drawings of the type specimen are by Mr. Sydney Prentice.

Family CRACIDAE

*Ortalis tantala* sp. nov.

*Characters*.—Similar to *Ortalis vetula* (Wagler)<sup>1</sup> but much smaller; tibio-tarsus with intercondylar sulcus relatively wider and more open; condylar region relatively broader.

<sup>1</sup> *Penelope vetula* Wagler, Oken's Isis, 1830, p. 1112 (Mexico).

*Description.*—Type, Cat. No. H.C. 498, collection of Harold J. Cook, distal end of right tibio-tarsus (figs. 10-14). Anterior face of shaft at lower end flattened, with a shallow groove toward inner margin that passes beneath a broad supratendinal bridge; openings beneath this bridge small, the bridge itself placed at an angle of 45° with axis of shaft; posterior surface of shaft rounded on sides and back; internal condyle in lateral outline rounded; a shallow groove for peroneus profundus on side of shaft just above this condyle; inner condyle projecting slightly farther anteriorly than posteriorly; outer condyle slightly flattened on distal margin, in general rounded but projecting decidedly toward front, this anterior projection being more pronounced than on inner condyle; intercondylar fossa broadly open, the external margins forming sharp angles with outer faces of condyles; intercondylar fossa narrow and relatively deep, with a distinct pit at its distal end; inner wall of fossa with a distinct overhang.

*Measurements.*—Transverse breadth across condyles 5.6 mm., depth of internal condyle 5.5 mm., depth of external condyle 5.2 mm., transverse breadth of shaft 3.3 mm.

*Remarks.*—The fossil has been compared with the modern genera *Crax*, *Penelope* and *Ortalis*, coming closest to the latter among these. Its differences from *Ortalis* are such that they may merit its distinction in a separate genus, but in view of the fact that skeletons of such genera as *Chamaepetes*, *Pauxis* and *Mitu* are not available at this time, and since the fossil material is small, it has seemed desirable to describe this form in *Ortalis*, to which it is certainly closely allied, rather than to erect a new generic group for it.

*Ortalis tantala* is peculiar in being the smallest known member of the family Cracidae, which includes the tree-inhabiting curassows, guans and chachalacas. Apparently it was less than one-half the size of the chachalacas, which include the smallest living members of the group, in point of size bearing about the same relations to these that they exhibit when compared with the curassows. It is interesting that in the latter part of the Tertiary there existed this relatively tiny species in a family that includes curassows as large as turkeys, a type of bird which certainly must have been in existence at that time, though the only other fossil of this family known at present is *Ortalis phengites* Wetmore described from the Snake Creek beds.

The type of *Ortalis tantala* is well fossilized and is ivory white in color.

#### ACCIPITRIDAE

Two phalanges come from two distinct forms of hawks, one (H. C. 499) being similar in size to the modern red-tailed hawk and the other (H. C. 497) considerably larger. It is not practicable to identify them more closely.

There is also the lower end of a left tibio-tarsus (H. C. 496), with the angles on the posterior faces of the condyles more or less broken away, that belongs in this same family. It seems near to what is currently known as *Geranoaëtus*. Comparison made with the type of *Urubitinga enecta* Wetmore, through the courtesy of Mr. Barnum Brown of the American Museum of Natural History, indicates definitely that it is not that species. The specimen is too worn and fragmentary for satisfactory generic determination.

U. S. National Museum, Washington, D. C., December 5, 1932.

## A NEW SPECIES OF OWL FROM THE PLEISTOCENE OF RANCHO LA BREA, CALIFORNIA

WITH ONE ILLUSTRATION

By HILDEGARDE HOWARD

Upon a recent examination of the owl bones in the Los Angeles Museum collections from Rancho La Brea, certain unusual specimens came to the writer's attention. All are of a size easily to be confused with slender bones of *Bubo virginianus* and, in fact, were found among the elements which had been so assigned in the first general survey of the collection. The specimens may be separated from those of the Horned Owl, however, on the basis of the same characters which distinguish members of the genus *Strix* from *Bubo*. Comparisons were made also with *Scotiaptex*, *Nyctea* and *Asio* of North America and *Pulsatrix*, *Rhinoptynx* and *Ciccaba* from the south.<sup>1</sup> The fossil, however, most closely accords with *Strix*, though it is larger than either North American species of that genus. Furthermore, from such information as can be gained from the literature on the subject, and from Dr. Wetmore who has kindly measured *Strix rufipes* for the writer, it is apparently larger than any other species of that genus or of the genus *Ciccaba*, which resembles *Strix* in many characters.

Nine of the principal skeletal elements have been identified and are fairly well represented, the number of available specimens totalling fifty-six.

With regard to the pelvis, the variation within the genus *Strix* and the similarities between *Strix* and *Bubo* in general characters make difficult a separation of the pelves of these two genera; this fact coupled with the somewhat fragmentary condition of the La Brea specimens has made it impossible to identify this element of the fossil form. This is the case also with the ulna. No furcula, cranium, or lower mandible of the fossil species is available; these elements are but poorly represented and the few specimens of large owl which occur in the collection appear to belong to *Bubo*. No attempt has been made to identify the radius, vertebrae, ribs or phalanges.

In describing the species, a tarsometatarsus has been selected as the type because of completeness of the specimen and the diagnostic features of the element. The other available elements are discussed as referred material.

The photographs of the type specimen were made by Mr. H. Wm. Menke.

### *Strix brea*, new species

*Type specimen*.—A complete and perfect tarsometatarsus, no. E9379 in the collection of the Los Angeles Museum, taken at a depth of 12 to 16 feet in Pit 16 at Rancho La Brea, California. Pleistocene.

*Description*.—Similar to *Strix* as distinguished from *Bubo*: (1) posterior surface of internal calcaneal ridge long and narrow, and concave on side toward edge of bone, this surface in *Bubo* either egg-shaped or slightly concave on opposite side; (2) distal margin of this surface (as seen in lateral view) sharply defined from portion of calcaneal ridge immediately distal to it, even overhanging; (3) internal calcaneal ridge noticeably set in from internal edge of shaft (in *Bubo* ridge blends into shaft); (4) sharp line of demarcation present on internal side between calcaneal ridge and shaft proper, caused in part by excavation of internal side of ridge; shaft in this region (as seen in internal view) narrowing decidedly, about 5 mm. from proximal end (*Bubo* lacks definite demarcation between ridge and shaft, ridge less

<sup>1</sup> Specimens of these owls were kindly loaned by Dr. Loye Miller, the United States National Museum, and the California Institute of Technology (Donald R. Dickey collection).

excavated and shaft broader); (5) at distal end, external edge of median trochlea straight, giving "sliced off" appearance (in *Bubo* this edge rounded).

Except for actual size, which exceeds both *varia* and *occidentalis*, the species characters show a combination of those of the latter forms. In its relative slenderness *Strix brea* parallels *S. occidentalis*, while in the less excavated anterior surface of the shaft it is closer to *varia*. The shaft in *occidentalis* is deeply excavated for



Fig. 15. TARSOMETATARSUS OF *Strix brea*, L. A. MUS. COLL. NO. E9379. TYPE SPECIMEN, NATURAL SIZE: a, ANTERIOR VIEW; b, EXTERNAL VIEW; c, POSTERIOR VIEW; d, MEDIAL VIEW.

about half the length of the bone, the tubercle for the tibialis anticus lying in this excavation; in *varia*, this region is only slightly depressed and in *brea* the depression is similar to *varia* in the region of the tubercle, but it does not extend as far distally even as in that species.

#### MEASUREMENTS OF TARSOMETATARSUS

|                           | a<br>Length | b<br>Breadth<br>prox. end | c<br>Breadth<br>dist. end | d<br>Breadth<br>shaft | Ratio<br>b to a | Ratio<br>c to a | Ratio<br>d to a |
|---------------------------|-------------|---------------------------|---------------------------|-----------------------|-----------------|-----------------|-----------------|
| Type, <i>Strix brea</i>   |             |                           |                           |                       |                 |                 |                 |
| L.A.M. no. E9379          | 67.2 mm.    | 14.3 mm.                  | 16.4 mm.                  | 7.1 mm.               | 21.2%           | 24.4%           | 10.5%           |
| <i>Bubo virginianus</i>   |             |                           |                           |                       |                 |                 |                 |
| L.A.M. no. Bi 66*         | 61.1        | 13.2                      | 16.1                      | 7.1                   | 21.6            | 26.3            | 11.6            |
| <i>Strix varia</i>        |             |                           |                           |                       |                 |                 |                 |
| L.A.M. no. Bi 55          | 56.4        | 13.0                      | 15.5                      | 7.2                   | 23.0            | 27.4            | 12.7            |
| <i>Strix occidentalis</i> |             |                           |                           |                       |                 |                 |                 |
| L. H. Miller no. 286      | 54.6        | 11.6                      | 13.2                      | 5.7                   | 21.2            | 24.1            | 10.4            |

There are eight tarsometatarsi of this species other than the type. These range in length from 63.5 to 68.0 mm., and the ratios of breadth of proximal and distal ends relative to length of bone are 19.4 to 21.2 per cent and 22.7 to 25.3 per cent, respectively, with ratios of breadth of shaft relative to length of bone, 9.4 to 11.0 per cent. In length these specimens all fall within the range of size of *Bubo virginianus* from Rancho La Brea though they are closer to the maximum than to the minimum for that species; all are more slender than *Bubo*, however.

*Referred material.*—In addition to the tarsometatarsi, the following elements referable to *Strix brea* are present: Two rostra, two sternebrae, nine coracoids, eight

\*Most slender modern specimen of *Bubo* available.

scapulae, six humeri, five carpometacarpi, four femora and eleven tibiotarsi. In general it may be said that each of these elements resembles *Strix*, but differs from the living species of that genus in larger size. More detailed characters and the principal measurements for each element follow.

**Rostrum:** Turbinates as seen in ventral view of palatal region less inflated than in *Bubo* and thus more widely separated in median line; similar to *Strix*, particularly *S. varia* in this character. Measurements of specimen K2713, height of rostrum (at posterior end of external nares) 20.7 mm., breadth of rostrum (at same point) 21.5 mm.

**Sternum:** Intermuscular line arising at ventral labial prominence or from edge of sterno-coracoidal impression posterior thereto (in *Bubo* line arises back of edge of sulcus and toward median line from sterno-coracoidal impression). Measurements of specimen E2477, breadth across sulcus 27.5 mm., greatest length (incomplete) 57.5 mm.

**Coracoid:** Resembling *Strix* rather than *Bubo* in sharply curved edge of furcular facet and less distinct pneumatic foramen adjacent thereto (this region not identical with either *varia* or *occidentalis*, however). On external side, most sharply convex portion of shaft stopping distal and slightly anterior to glenoid facet (in *Strix* and *Bubo* it continues proximally to bicipital attachment, in a direct line in the former and at an angle in the latter); except for this character external view of head region similar to *Strix*. Lateral relative to anteroposterior measurement of head less than *Bubo* and similar to *Strix*. Length of coracoids 44.2 mm. to 49.3 mm. (shortest *Bubo* 47.4 mm., longest *Strix* 43.2 mm.).

**Scapula:** Acromion broader (laterally) and deeper (dorsoventrally) than in *Bubo* and similar to *Strix*. Glenoid facet with more rounded sides (appearing more "heart-shaped") than *Bubo* (ventral side straight in that genus); resembling *Strix* in this character but by measurement found to be relatively longer and narrower with proportions similar to *Bubo*. Breadth of anterior end 11.8 mm. to 12.3 mm., proportions of glenoid facet (breadth to length) 65.5 to 78.5 per cent.

**Humerus:** The humeri are very much chipped on the edges so that in no one specimen can all characters be observed nor can any characters of unusual importance be discerned. Set apart from *Bubo* by character of muscle scars on palmar side at distal end, difficult to describe but somewhat similar to *S. varia*, and by relatively higher pneumatic opening under median crest. Large size indicates specific distinction from *Strix varia* or *occidentalis*. Measurements on three nearly complete humeri: length 112.5 mm. to 121.3 mm. (minimum length of *Bubo* 121.6 mm., maximum length of *Strix* 104.6 mm.), breadth of proximal end 19.6 mm. to 20.9 mm. On only the largest specimen can the distal end be measured, its breadth being 19.8 mm.

**Carpometacarpus:** Distinguished from *Bubo* by character of distal metacarpal symphysis, difficult to describe but in general thicker through proximal portion and with proximal border continuous with a ridge extending short distance up shaft on posterior side; characters of symphysis similar to *Strix* though ridge continuing from proximal border present only in *S. occidentalis*. Distal portion of metacarpal III, seen in posterior view, slightly depressed, giving flat appearance as in *Strix*; distal portion of M III in *Bubo* (posterior view) distinctly convex. Maximum and minimum lengths of five specimens of *S. brea*, 59.9 mm. and 56.2 mm., smallest *Bubo* 60.5 mm., largest *Strix* 52.2 mm.

**Femur:** Similar to *Strix* and distinguished from *Bubo* by central position of muscle scar on external side of shaft near distal end; this scar in *Bubo* located at anterior edge of shaft. Large size separates specimens from living species of *Strix*. Length (on internal side) 75.6 mm. to 76.6 mm. (about equal to average *Bubo*, largest *Strix* 69.7 mm.), breadth of distal end relative to length 19.1 to 20.2 per cent, breadth of proximal end relative to length, 19.3 to 20.2 per cent.

**Tibiotarsus:** Like the humeri, the tibiotarsi have all been broken or slightly chipped. A study of the ten available specimens, however, reveals at least two general characters which distinguish these specimens from *Bubo*: (1) muscle scars of inner cnemial crest not extending distal to crest proper and parallel to shaft; (2) less angular difference present between lines drawn tangent to proximal and distal edges of condyles (the angle formed by the extension of these lines ranges from four to seven degrees in the fossil and from nine to thirteen degrees in *Bubo*). In both



of these characters fossil specimens resemble *Strix*, but larger size precludes the possibility of identity with living species of that genus. Length 112.7 mm. to 120.0 mm. (minimum of *Bubo* 116.9, maximum of *Strix* 103.4 mm.), relative breadth of proximal and distal ends approximately 11.4 and 11.8 per cent, respectively.

*Remarks.*—Though in length of the individual elements *Strix breia* is closer to *Bubo* than to either *S. occidentalis* or *S. varia*, in its proportions the resemblance is with *Strix*. The difference from *Bubo* is immediately evident upon comparing the tarsometatarsi and femora, which equal or even exceed the longest specimens of *Bubo* in size, with the other limb elements and the coracoid, all of which extend below the minimum for that genus. Ratios of one element relative to another indicate close similarity with *Strix* throughout, with the exception of the coracoid which appears to be relatively shorter. *S. occidentalis* and *S. varia* differ in the relative length of tarsometatarsus, and the fossil agrees with the former.

It should be noted that the discovery of the specimens here described as *Strix breia* entails a slight, though interesting change in a graph published by Husband (Condor, xxvi, 1924, p. 221) showing the comparative measurements of thirty-six specimens of tarsometatarsus supposedly all of *Bubo virginianus*. We find that specimens number 11, 35 and 36 of her chart, each of which forms a noticeable low point in the measurements other than length, are of the new species, *Strix breia*. The occurrence of these three specimens in this chart provides an excellent illustration of the relatively greater slenderness of the tarsometatarsus of *Strix breia* as compared with *Bubo virginianus*.

*Los Angeles Museum, Los Angeles, California, September 15, 1932.*



## FROM FIELD AND STUDY

**The Scratching of the Spurred Towhee.**—The Spurred Towhee (*Pipilo maculatus montanus*) is a perching bird that has entered the field of scratching to earn a living. In Zion Cañon in Utah it is an inhabitant of the dense thickets of oak, sarvis-berry, squawbush and streamside deciduous trees. It is primarily a ground-living bird, nesting among the thickets and hunting its food chiefly among the trash and leaves, but does not hesitate to ascend the trees and brush at other times.

Certain other birds, such as the Long-crested and Woodhouse jays that frequent such thickets in Zion Cañon, usually garner their supply of insect food from the tree tops or from the visible supply on the surface of the ground, but the towhee has a specialty all its own that they do not reach. If the visible food supply on the surface is not sufficient for its needs, the towhee takes to turning over the leaves and scratching among the trash with its feet. This is a complex operation that it is fitted admirably to perform. The Woodhouse Jay will, on occasion, dig with its bill into the trash to follow an insect that has disappeared or to hide an acorn, but it does not use the feet in scratching and does not make a business of dipping into the trash.

Scratching birds like chickens stand on one leg and scratch with the other, but not so with the towhee. Being a small bird, it would have a difficult time turning over a leaf with one foot while standing on it with the other. Such difficulties are solved by using both feet. In order to use both feet, the body must be balanced in the air during the scratching operation.

This is accomplished by jumping into the air and drawing the feet backward while the upward momentum lasts. Drawing the feet backward and raking trash or leaves at the same time tends to overbalance the body forward. The bird uses several methods to hold its balance, either singly or in combination. Nearly always, the scratching motion of the feet is accompanied by an upward and forward jerk of the tail. Sometimes the wings flutter forward, and always after the scratching stroke the feet are brought forward quickly to catch the body and keep it from falling. Sometimes a backward movement of the body is made in jumping and the feet rake the trash while the momentum lasts. This is accompanied by a downward movement of the tail. All of these movements are carried on automatically and seemingly with the greatest of ease.

Sometimes, when the jump is made, the feet are thrust forward and trash in front of the bird is caught and pulled backward. Other times material underneath is moved, while occasionally material just behind the feet will be kicked out of the way by vigorous backward strokes.

Sometimes the trash is kept flying by quick successive strokes, but if insects, spiders or other interesting food items are exposed to the eye of the bird, it suddenly stops and picks up such items one by one. And thus it taps a food supply not available to its competitors in Zion Cañon. On one occasion, I saw a Woodhouse Jay make a dart at a towhee. The smaller bird merely flitted away a few feet and stopped. The jay did not pursue any farther. At another time, a gray rock squirrel came nosing around very close to the towhee, evidently paying no attention to the bird. The bird, however, flitted quietly out of the way a few feet and went on scratching.—A. M. WOODBURY, *University of Utah, Salt Lake City, Utah, November 19, 1932.*

**Traveling Speed of White Pelicans.**—On the late afternoon of November 14, 1932, I was able to take the steady flying speed of a large flock of White Pelicans (*Pelecanus erythrorhynchos*) numbering approximately 120 individuals. The flock followed York Boulevard in the Highland Park district of Los Angeles from Glassell Boulevard to and across the Arroyo Seco, a distance of  $3\frac{1}{2}$  miles. Owing to traffic signals it was impossible to maintain vehicular speed identical with that of the pelicans for other than short distances. After numerous attempts to stay with the fowl, it was apparent they were making a little better than 30 miles per hour, or more precisely, 31 miles per hour with an error of plus or minus one.—ROLAND CASE ROSS, *Los Angeles City Schools, Los Angeles, California, December 7, 1932.*

**King Snake Eating Eggs of California Quail.**—The following history of a single nest of the California Valley Quail (*Lophortyx californica vallicola*) furnishes an insight into a few of the many difficulties with which these birds may have to contend. It also lends credence to the frequently voiced idea that a nest once disturbed is doomed to misfortune. This incident occurred while I was engaged in an investigation of the California Quail on the ranch of Mr. R. W. Hanna, three miles west of Payne Creek Post Office, Tehama County, California. It was through the courtesy of Mr. Wilbur Eckels, who was in charge of the farm, that my attention was called to this particular nest. The observations upon it will be given under the date and hour at which they were made.

July 15, 1930, 11:30 a. m. Mr. Eckels reported that while grubbing black walnut sprouts he sank his hoe into a quail's nest. The nest was well hidden and his first realization of its presence came when the incubating bird, the female, fluttered from it.

12:45 p. m. In company with Mr. Eckels, I visited the nest. The bird had not returned, and he feared that he had hit it with the hoe. He said that it appeared to be badly wounded. An examination of the nest revealed that originally it had contained thirteen eggs, and that seven of them had been crushed by the single stroke of the hoe. I cleared away the broken eggs and disposed of them in a nearby pond. The remaining whole eggs I washed to remove the egg contents with which they were smeared. The egg material splattered in and around the nest was dry by the time the whole eggs were replaced. The nest had been torn slightly, and I restored it to as natural a condition as possible.

The nest was of the usual quail type, made of grass, and had been placed in the center of a small clump of black walnut sprouts which had been about 15 feet in diameter before the grubbing began. It was within 35 feet of an infrequently used ranch house, and was about 65 feet from a large artificial pond. An irrigation ditch ran within 40 feet of the nest. Nearby trees afforded shade during the morning, but after noon the walnut shoots were the only protection from the sun.

4:30 p. m. When I visited the nest again at this time I found that the female had returned and was incubating. It was evident that her experience of the morning had been unnerving, for she flushed from the nest when I was still twelve feet away. The eggs and nest appeared to be unchanged from their condition at noon.

6:30 p. m. Mr. Eckels visited the nest at this time and discovered a king snake (*Lampropeltis getulus boylii*) in the act of eating the eggs. He watched the snake eat two of the six eggs, breaking them in its mouth before swallowing them. He said that the quail stood close by and watched the procedure but did not show any excitement or make any sounds. Mr. Eckels killed the snake after it had eaten the second egg.

7:10 p. m. After hearing Mr. Eckels' report I went to collect the snake and to see what further damage had been done. To my surprise I found that the quail had returned to the nest and that the dead snake lay only five feet from where she was incubating. This time she flushed when I was about eight feet away.

9:50 p. m. The shack in which I was staying was about 100 feet from the nest and was sufficiently close that I could hear most noises originating in that vicinity. At 9:50 I heard a quail flush and fly noisily through the brush. This came from the general direction of the nest and possibly may have been made by the same bird.

July 16. The quail apparently had deserted the nest, since in three visits to it I failed to find her incubating. At 4:20 p. m. the eggs were cold.

July 17, 5:00 p. m. When the nest was visited at this time the eggs had disappeared. Unfortunately, it had not been looked at earlier in the day, so it is impossible to say whether they were taken during the preceding night or during the day. There were no egg-shells either in the nest or in the nearby grass and brush. The nest remained intact and no hair, tracks, or droppings could be found in or close by it. It is difficult to say to what agency this final destruction can be attributed. Stoddard (*The Bobwhite Quail*, New York, Charles Scribner's Sons, 1931, pp. 187-193) found, in the case of bobwhite nests, that most predatory mammals left broken egg-shells at the nest. At the Hanna ranch, pains had been taken to remove house cats and free-ranging dogs, so that the possibility of these doing the damage was small. Spotted skunks (*Spilogale*) were common, but these would probably have left the egg-shells. King snakes and gopher snakes (*Pituophis catenifer heermanni*) were

also common. One gopher snake, about six feet in length, was regularly seen about the barn and corral, which were 150 feet from the nest. In view of the circumstances it seems that the disappearance of the eggs can be most logically attributed to some species of snake.

The attraction of the observed king snake to the nest can probably be explained by the egg material spattered in and around its edges. This, doubtless, gave rise to an odor that possibly could be detected by a foraging snake or other predator to whom quail eggs might appeal as food. It is interesting to note the relatively short time that elapsed between the initial disturbance of the nest and the appearance of a hungry animal to finish the destruction. It is probable that, had the nest been near an ordinary farm or ranch, where there are numerous dogs and house cats, the remaining eggs would not have lasted as long as they did.

There may have been any one of three reasons for the wounded appearance of the bird when it fluttered from the nest at its initial disturbance. The bird may have been actually wounded by the striking of the hoe. Its peculiar behavior may have been an attempt to draw away the intruder; or, it may have resulted from a lack of coordination and direction, brought on either by extreme fright, or by a conflict of instincts, due to the suddenness and intensity of the disturbance. In considering these possible reasons the following facts should be kept in mind. Only in the first observation did the bird display any signs of being wounded. All subsequent flights were perfect and the response quick. In the succeeding observations the bird made no attempts, either when flushed from the nest or when the snake was eating the eggs, to draw away the intruder. These facts lend strength to the supposition that fear, or a conflict of instincts, may have been responsible for the wounded-like actions. This infrequently expressed hypothesis for the explanation of the broken-wing trick is advanced and argued for in detail by Douglas Dewar (*Birds at the Nest*, London, John Lane, the Bodley Head, Limited, 1928, pp. 167-194).

The fact that the incubating bird returned to the nest after the eggs were suddenly reduced in number from thirteen to six, their contents smeared over the nest, and finally, after two more were taken by a snake, makes this an unusual demonstration of dominance of parental instinct. This could hardly have been the devotedness that is frequently observed to accompany long incubation, since the eggs were almost fresh.—LAWRENCE V. COMPTON, *Museum of Vertebrate Zoology, University of California, Berkeley, January 20, 1933.*

**The Hudsonian Curlew at Wales, Alaska.**—Among the specimens received by the Chicago Academy of Sciences this past season from its representative, Dwight Tevuk, at Cape Prince of Wales, Alaska, was an adult male curlew (*Phaeopus hudsonicus*). The specimen (C. A. of S., no. 5840) was taken near the Mint River on July 1, 1932. This is the first record, so far as I know, of the species from the Wales region, although I saw a few curlew in this vicinity on July 6 and 8, 1922, and recorded the sight observations in the Condor (XXVIII, 1926, p. 84). As I had taken *P. tahitiensis* at Wales, these observations were mentioned under that heading.—ALFRED M. BAILEY, *Chicago Academy of Sciences, Chicago, Illinois, December 1, 1932.*

**Two Duck Records from the Imperial Valley of California.**<sup>1</sup>—During the past several winters the writer has shot at a small, ten-blind club between Mecca and the northern end of Salton Sea and consequently has had opportunity to observe enough ducks to gain a fair idea of the species which go to make up the winter duck population of that locality. Of course, by far the great majority of ducks seen or killed belong to the "common" species (though "once common" would be a better term) and only two have been of sufficient rarity to be noteworthy. The Ring-necked Duck (*Nyroca collaris*) is a rare, though apparently regular, visitor; for one or two have been killed each season. Dates are from November 11 to December 20, the last one being November 27 of the present (1932) year. A still rarer visitor to this desert locality is the Wood Duck (*Aix sponsa*). On November 13 of this year a male was unwittingly killed by one of the other members, who brought it to my blind to have it identified! The bird is now a skin in the collection of the California Institute of Technology.—A. J. VAN ROSSEM, *Pasadena, California, December 7, 1932.*

<sup>1</sup> Contribution from the California Institute of Technology, Pasadena.

**The Snowy Egret in Marin County, California.**—According to "Bird-life of the San Francisco Bay Region" (Pacific Coast Avifauna, no. 18, 1927, p. 61), the only occurrences of the Snowy Egret (*Egretta thula thula*) within the bay region are three individuals seen in spring or early summer on the Farallon Islands; it has been found in San Mateo County, but the dates are not known.

On March 5, 1932, as I was walking across the new Richardson Bay bridge between Manzanita and San Rafael, I saw a small white object at the end of a sand spit near the south side of the structure. At first I presumed it to be a gull; then as I drew closer, and was able to see the heron shape, I believed it to be a night heron; and at last, on close approach, it dawned on me that it was a Snowy Egret. I had seen the birds several times before on their breeding grounds in the lower San Joaquin Valley, and am positive of the identification. The bird did not even notice the constantly passing automobiles; but as I drew closer, it became more and more alarmed, and finally, on snowy wings, flew up, circled around and crossed over the bridge, flying northward. At all times in flight the black legs and yellow feet were evident.

Another record, undoubtedly the same bird, was obtained on February 28, when it was seen near the same bridge from the train, by Edwin McClintock.—HAROLD SWANTON, *Oakland, California, March 29, 1932.*



Fig. 16. NESTING SITE OF WESTERN BLUEBIRD, IN ORNAMENTAL TILE ON STUCCO WALL; SAN MARINO, CALIFORNIA.

**Western Bluebird Nesting in Wall Tile.**—The nesting of the Western Bluebird (*Sialia mexicana occidentalis*) in the lowlands of southern California is infrequent enough to justify the following notice. In the spring of 1931, Mrs. Beatrice Sisk advised me of nesting bluebirds at her San Marino home. Early in May, 1932, she again called and upon our visit showed us the adults and two of the three juveniles successfully launched on May 1.

The nesting site is shown in the cut (fig. 16), being within the lower left cavity beneath an ornamental tile projecting from a stucco wall. The environment is partly modern urban with spacious grassland studded with oak groves coming within half a block. The elevation is 500 feet. The open grove effect of the whole San Marino district probably accounts for the summer presence of the Western Bluebird; the

subdivisions and "improvements", including complete tree surgery, have probably produced sufficient nesting cavity shortage to force stucco and tile upon the bluebird's attention.—ROLAND CASE ROSS, *Los Angeles City Schools, Los Angeles, California, December 7, 1932.*

**The Bridled Titmouse near Tucson, Arizona.**—In view of the scarcity of published records of the occurrence of the Bridled Titmouse (*Baeolophus wollweberi annexus*) below the oak belt in Arizona, the following may be of interest. On October 2, 1932, at 11:25 a. m., two of these birds were seen in my front lot, three miles west of Old Fort Lowell and about a quarter of a mile south of Rillito Creek, elevation approximately 2400 feet, Pima County, Arizona. They were traveling west and were observed in a mesquite tree at a distance of thirty feet through 8x binoculars.

The surrounding district consists chiefly of small scattered farms interspersed with areas of creosote bush and a few mesquite and catclaw trees. Close by is the dry Rillito Creek bed with its border of mesquite and a few cottonwoods and desert broom in the bottoms. A mile to the north is the wide alluvial fringe of the Santa Catalina Mountains with giant sahuaro, palo verde and cholla.—A. H. ANDERSON, *Tucson, Arizona, November 19, 1932.*

**The Gila Woodpecker in the Imperial Valley of California.**<sup>1</sup>—On March 21, 1932, I saw what I was certain were two Gila Woodpeckers (*Centurus uropygialis uropygialis*) in a row of cottonwoods near the town of Calipatria near the south end of Salton Sea, but there was no opportunity for certain identification; while the circumstance was noted as "probable" there was the chance that flickers might have been what actually were seen. However, on June 14, while en route to Arizona in company with Mr. Robert T. Moore, several of these woodpeckers were seen on fence posts at various places along the highway between Brawley and El Centro. They were tame enough to permit us to stop the car and examine them at leisure. Again, on the return trip, early in July, I saw occasional birds in cottonwoods and on roadside fence posts near Holtville, El Centro and Brawley. Mr. A. B. Howell, to whom I mentioned the presence of Gila Woodpeckers in the Valley, tells me that he first noticed them in the vicinity of his ranch near Calexico in 1931.

These birds, until now, were known as residents of California only through their occupancy of the narrow strip of riparian growth along the Colorado River. Their spread into the Imperial Valley to points as far west as the southern end of Salton Sea is unquestionably due to the planting of cottonwoods and other trees in the locality, one which was formerly unsuited to their requirements. The route of ingress has most probably been along the International Canal rather than over the inhospitable desert to the east.

Inquiry at several date farms in the Coachella Valley at the north end of the sea has, to date, indicated that Gila Woodpeckers have not invaded the groves there. It would seem to be only a question of time, though, before such is the case, an invasion which will probably not be hailed with enthusiasm by date growers.—A. J. VAN ROSSEM, *Pasadena, California, December 7, 1932.*

**Early Nesting of the Leconte Thrasher.**—Many years ago M. French Gilman of Banning and I, while wandering over the desert in Coachella Valley, California, found a nest containing young of Leconte Thrasher (*Toxostoma lecontei lecontei*). We judged that the nest must have contained eggs during late January and we then decided that we would some time find a set of eggs in that month and establish an early record.

For a number of years after this we made numerous trips to the desert in late January in our quest but with absolutely no results, and finally discontinued them. Late January of this year was cold and an acquaintance remarked to me that it would be a long time before I would be collecting eggs. This discouraging remark proved to be a spark that made me reply, "No, I will start on a trip tomorrow morning at five." True to my remark I started in the cold with Fred Frazer and Rex Parker for helpers in the renewed quest.

<sup>1</sup> Contribution from the California Institute of Technology, Pasadena.



We separated, so as to cover as much country as possible, and spent January 31, 1932, searching the desert in Coachella Valley. The trip was not in vain for Fred Frazer found a typical nest in the center of a cholla cactus on the open desert. We joined him and after flushing the bird from the nest several times, and taking some photographs, I took the three slightly incubated eggs for my collection.—WILSON C. HANNA, Colton, California, December 26, 1932.

**Some Fall Migration Notes from Northern Arizona Lakes.**—In the forest of western yellow pines (*Pinus ponderosa*) south of Flagstaff, Arizona, are some thirty lakes within as many miles of that town. These lakes are principally found in depressed areas upon lava flows, but a few are crater lakes and one, Lake Mary, is artificially formed. They are scarcely known ornithologically. Mearns visited several of them in the late eighties and published his notes as a part of "Observations on the Avifauna of Portions of Arizona" (Auk, vii, 1890, pp. 45-55, 251-264). He referred to the region as the "Mogollon Mountains," but geologically it is a part of the San Francisco Mountains. In recent years few observations have been recorded from any of these lakes.

Several times during the fall of 1932, I visited Long Lake, about thirty miles from Flagstaff by road, and in so doing passed Lake Mary and Ashurst Lake, nine and twenty-five miles, respectively, from that town. One trip was made to Stoneman Lake still farther south. These lakes are all in the Transition Zone and are well above 6000 feet in elevation.

In view of the scarcity of records from the region and because of several records of note, a part of my observations are here given. Large numbers of ducks and geese seen will be treated separately at a later time. Numbers refer to specimens in the collection of the Museum of Northern Arizona.

*Colymbus auritus*. Horned Grebe. On October 16 a grebe (no. 3373, ad. ♂) was taken by me at Stoneman Lake and has been identified by Dr. A. Wetmore as of this species. No other grebes were seen; but only a short distance was patrolled as the shore was lined with hunters awaiting the opening of the duck season. Though the lake is small, it is estimated there were thousands of water fowl upon it and it is likely that more grebes were among them.

The Horned Grebe is placed in the "hypothetical list" of the birds of the state as having been recorded only by Coues who reported it from the Colorado River and Fort Grant, "statements which are not sufficiently explicit" (Swarth, Pacific Coast Avifauna, no. 10, 1914, p. 81). A review of the *Condor* has failed to reveal record of the occurrence of *C. auritus* in Arizona. It is thus gratifying to substantiate the record of Coues.

*Colymbus nigricollis californicus*. Eared Grebe. Though Mearns (*op. cit.*, p. 50) found this bird breeding in great numbers in the general region, only one published fall record is available, that of a grebe believed to be of this species and which was seen by me on Horse Lake just south of Flagstaff on November 14, 1930 (Miscellaneous Bird Notes from the San Francisco Mountains, Grand Canyon Nature Notes, vii, no. 2, p. 19). The ground was covered with snow, and ice rimmed the shore.

On August 14, 1932, I found this grebe to be common on Ashurst Lake. One specimen (no. 3277) was taken. Winter plumage had not been completed. Identification has been checked by Dr. Wetmore. Only one grebe was seen on Long Lake on October 30. On this date, Dr. F. M. Murphy of Flagstaff reported that grebes were common on Ashurst Lake. He had visited this lake at least once a week since October 16 and found little change in numbers during this period. No grebes were seen on Long Lake on November 6, but six were counted there on November 20.

Swarth (*op. cit.*, p. 9) refers only to the records of Mearns from this region. A review of the *Condor* since 1909 revealed only one record of the Eared Grebe from the state (Goldman, *Condor*, xxviii, 1926, p. 160). These few reports, however, should not be interpreted as giving the true status of the species.

*Ardea herodias treganzai*. Treganza Blue Heron. The Blue Heron is not common on the plateau. In a recent issue of the *Condor* (xxxiv, 1932, p. 217) I gave a summary of all records known from the region. No specific fall dates were available. During the last half of October and until the last week in November, I made several trips to these lakes but not one heron was seen. On November 6, however, Mr. J. D.

Walkup of Flagstaff reported one from Lake Mary. One week later, Mr. Dean M. Eldridge, owner of the Dean Eldridge Museum east of Flagstaff, took an immature male at the same place as reported by Walkup.

*Fulica americana americana*. American Coot. Coots were abundant on Stoneman Lake on October 16 and outnumbered by far all other water fowl. When the duck season opened at noon, ducks left the lake by the hundreds, but the thousands of coots remaining seemed little concerned with the bombardment from shore and formed a dense, dark mass well out in the lake. Hunters in boats rowed through the flocks, but the coots generally refused to fly. On the same date, Dr. Murphy reports they were relatively as abundant on Ashurst Lake. A visit to this and Long Lake on the 30th showed no noticeable decrease in their numbers. On Long Lake the center of the lake appeared solid black with them and the coots should probably be numbered by the thousands. Little if any difference in numbers had occurred here by November 6; but on the 20th there probably were not more than 500 on the entire lake, and by boat an exact count could have been made without great difficulty as on all occasions these birds paid little attention to anyone.

The only previous fall record from the region appears to be that of Swarth (Condor, xxvi, 1924, p. 185), October 15, 1922, when several were seen on a tank "thirty miles north of San Francisco Mountain." The only other fall record for northern Arizona seems to be a bird "reported from rain tank near Desert View (Grand Canyon National Park) autumn of 1926" (McKee, Preliminary Check List of Birds of Grand Canyon, Grand Canyon National Park, 1930, p. 3).

*Oxyechus vociferus vociferus*. Killdeer. Fairly common at Stoneman Lake on October 16 and at Ashurst and Long lakes on the 30th. Less common at Long Lake on November 6 where only a few remained by the 20th.

*Capella delicata*. Wilson Snipe. Dr. Murphy reports that two Wilson Snipe sat down in a tule patch in Ashurst Lake on October 30 only a few feet from his boat—so close to him, in fact, that he could have reached them with his paddle. I know of no other record from the region.

*Catoptrophorus semipalmatus inornatus*. Western Willet. In a recent issue of the Condor (*op. cit.*, p. 217) I reported a single Willet from Marshall Lake as observed in April. Swarth (1914, p. 20) reports one other spring record, May 5, 1871, and Kimball (Condor, xxv, 1923, p. 109) gives another, May 13, 1922. Swarth (*loc. cit.*) cites two fall records, one for October 18, 1864. On November 6, I saw another single Willet at Long Lake and attempted to collect it. Jenks (*op. cit.*, p. 13) lists one from the Painted Desert and one from the Kaibab Plateau in summer. These appear to be the only published records for the state.

*Totanus flavipes*. Lesser Yellow-legs. On August 14 at Ashurst Lake, Yellow-legs were abundant. Many singles and flocks numbering twenty or more individuals were scattered along the shore. When disturbed they circled and wheeled but finally settled to resume feeding. Since Jenks (*op. cit.*, p. 13) had recorded the Greater Yellow-legs (*Totanus melanoleucus*) from the region, as also had Swarth (1914, p. 185), these birds were taken to be the same. A single bird collected (no. 3276), however, has been examined by Swarth and proves to be *flavipes*. In absence of comparison with other yellow-legs on the shore of the lake it is not known if others seen were of the same species. The only other record for the state seems to be that of Lincoln (Condor, xxix, 1927, p. 164) who reported a number of specimens taken by Mearns "in southeastern Arizona between August 2 and 29, 1892."

*Limnodromus griseus scolopaceus*. Long-billed Dowitcher. On August 14 at Ashurst Lake I saw a lone dowitcher feeding with yellow-legs and killdeers. A number of phalaropes were feeding nearby. The bird, a male, was collected and is now no. 3275 in the Museum collection. The specimen was sent to Mr. Swarth for subspecific identification.

The importance of this record is based upon the probability that this may be the only known specimen of this subspecies from Arizona. When Swarth prepared his distributional list of Arizona birds (*op. cit.*, p. 19) available information concerning this species was not only scarce but was indefinite. Coues (Prodrome of a Work on the Ornithology of Arizona Territory, Proc. Acad. Nat. Sci. Phila., 1866, p. 61) says the dowitcher is "sparingly distributed throughout the Territory." To quote Swarth: "Henshaw . . . lists a specimen from Mimbres, Arizona, October 22, and comments that the species is 'apparently an uncommon visitor in Arizona.' A



specimen entered in the British Museum Catalogue of Birds . . . : '♀ ad, Arizona, Oct. 22, C. G. Newberry', is probably the same one alluded to by Henshaw." Swarth states further that all are referred to as *Macrorhamphus griseus* but that "it seems more probable that the form occurring in Arizona is *M. g. scolopaceus*" and that he had seen no specimens from the region. I have examined all issues of the *Condor* since 1912, but found no reference to this bird from Arizona.

*Larus californicus*. California Gull. Gulls are common and even abundant on northern Arizona lakes at certain seasons though I know of no specimens having been taken prior to the fall of 1932. Jenks (*op. cit.*, p. 14) reports a number of records for both spring and summer, but as his data are arranged in a tabulated form and no distinction between sight and specimen records is made, positive identification of certain species is often doubtful. Then, too, occurrence is listed seasonally and no day or even month is given. However, he unquestionably establishes the frequent occurrence of gulls in the region. Reference is also made by him to a gull seen at the bottom of the Grand Canyon and to one in the Painted Desert.

None of these lakes has been visited by me during the summer but I have found gulls present both in the spring and in the fall. On April 16, 1931, I counted forty at Mormon Lake, and on May 3, of the same year, an adult was observed at Marshall Lake. This past fall, October 30, two large gulls were seen on Long Lake. On this date Mr. J. C. McGregor reported one from Horse Lake. Another October record is supplied by Mr. Eldridge who told me that he saw eight gulls on Marshall Lake "during the first part of the duck season in 1926." On November 20, I spent the entire day at Long Lake, during which time only one gull came in. This bird was collected (no. 3503, im. ♂) and has been identified as *californicus* by Mr. T. T. McCabe and Dr. Jean M. Linsdale, in collaboration. Swarth (*loc. cit.*) does not include this species in the state list, and a review of the *Condor* has failed to reveal the occurrence of the California Gull in Arizona. This record is therefore probably the first from the state.

*Larus delawarensis*. Ring-billed Gull. I was at Long Lake before sun-up on November 6, 1932, and at exactly 7 a. m. gulls began to arrive from the northwest, probably from Lake Mary. Several always came in together and one flock numbered eleven. Thirty-three individuals were counted during the morning. One gull, an immature male (no. 3443), was collected and has also been examined by Mr. McCabe and Dr. Linsdale, who jointly determined it to be *delawarensis*.

Swarth (*op. cit.*, p. 9) states that this species was "seen by Coues on the Colorado River in the autumn of 1865" and that Price "doubtfully identified as of this species two small gulls seen near Yuma, November 27, 1898." I have found no other references to this species from Arizona. This specimen may be the only one from the state.

*Larus philadelphia*. Bonaparte Gull. Six small light-colored gulls, believed to be of this species, were seen by me on Long Lake on October 30, but I was unable to get a shot. Descriptions of the birds and the circumstances attending their observation were told to Dr. Wetmore who stated there could be little doubt of the identification. Swarth (*op. cit.*, p. 10) says that "Dr. Coues met with the species on the Gila River, and on the Colorado River, between Forts Mohave and Yuma, in September, 1865, but it has not been observed in the region by any one since that time." There appear to be no other published records from the state.

*Chlidonias nigra surinamensis*. Black Tern. Two of these birds were observed at Ashurst Lake on August 14, and after patiently waiting for some time one was shot. The second bird immediately came to the fallen one and was also collected. One was a juvenile male (no. 3273); the other (no. 3274) was an adult male molting into winter plumage. Both have been examined by Mr. Swarth. According to published records the species is rare in Arizona. Swarth (*op. cit.*, p. 10) refers only to two specimens taken, both from southern Arizona. One was collected in the fall, the other in April. The only other record seems to be that of Jenks (*op. cit.*, p. 14) who reports one from the Painted Desert during the summer. Mr. Jenks told me that this bird was observed flying over a tank (an artificial pool of water), but it was not collected. The *Condor* from 1909 to date does not mention this species from Arizona.—LYNDON L. HARGRAVE, *Museum of Northern Arizona, Flagstaff, January 16, 1933.*

**The Polynesian Tattler on St. Lawrence Island.**<sup>1</sup>—The United States National Museum has recently received seven specimens of shore-birds from St. Lawrence Island, all collected in June and July, 1932, by Paul Silook, an Eskimo resident of the island. Among them is a fine specimen of the Polynesian Tattler, *Heteroscelus brevipes* (Vieillot), taken in July (no exact date given on the label). The bird, which is unfortunately unsexed, is in quite fresh plumage. This species has been recorded hitherto from only one locality in North America, St. Paul Island, Pribilof Islands, where three specimens have been taken, each at a different time, but all in the months of September and October.—HERBERT FRIEDMANN, *United States National Museum, Washington, D. C., December 15, 1932.*

**The Inner Abdominal Feather Region in Brooding Woodpeckers.**—In his paper on the pterylography of woodpeckers, Burt (Univ. Calif. Publ. Zool., 30, 1929, p. 435) described a row of feathers lying on either side of the midventral line medial to the principal abdominal tract. This row he named the inner abdominal region in contradistinction to the main or outer abdominal region. While occupied with the preparation of study skins of Hairy Woodpeckers, *Dryobates villosus*, at Ochoco Ranger Station, Crook County, Oregon, in June, 1932, I noticed that breeding adults had lost the feathers of this inner abdominal region in conjunction with the development of a brooding area on the belly. The entire area between the two outer abdominal regions was highly vascularized and entirely nude. Since it is not usual for birds to drop contour feathers to provide a specialized brood patch, I was led to study more closely the nature of the feathers of this inner region.

Burt described the feathers of the region in question as downy in character. Ordinarily, typical down feathers are not represented with any great completeness in pterylographic drawings, since they usually are indefinite in their arrangements, at least in Picidae and Passeriformes. The marked regularity of the downy inner abdominal feathers was evidently the factor that led, justifiably, to the recognition of the row as a distinct region. Closer examination of these feathers shows that they are intermediate between typical downs and contour feathers. Samples plucked from an alcoholic specimen of an Arctic Three-toed Woodpecker, *Picoides arcticus*, possess a definite shaft extending through the proximal half of the feather, well beyond the superior umbilicus; the distal barbs form a loose vane resembling in coloration and texture the contour feathers of the outer abdominal region. In their incomplete shaft and in their abundance of non-cohesive barbs basally they are similar to downs. True downs from this part of the belly of a representative passerine species such as the Oregon Junco, *Junco oreganus*, are essentially without a rachis, have very short quills, and show no cohesion of the distal barbs. Not uncommonly in the juncos, and in some other sparrows, I have observed that the downs tend to form an irregular longitudinal row that is extremely suggestive of the more definite row of larger feathers in the woodpeckers. The downs of the bellies of passerines are, of course, lost in the development of a brood patch.

In two Hairy Woodpeckers, numbers 61360 and 61361, Mus. Vert. Zool., taken June 21, 1932, at Ochoco Ranger Station, new feathers of the inner abdominal row were growing coincident with the replacement of the innermost primaries. No other feathers of the body, wing or tail were molting at this time. Similar coincidence of appearance of new inner abdominal feathers with the earliest phase of the annual molt was noted in Lewis Woodpeckers (*Asyndesmus lewisi*) and Arctic Three-toed Woodpeckers during July, 1932. Since in these woodpeckers both sexes develop brood patches, the method of replacement in the two sexes was the same. Juncos, for example, do not grow downs on the old brood patch until the ensuing annual molt is well advanced and adjacent contour feathers are partly molted. Germs of the inner abdominal feathers of woodpeckers, then, after a prolonged dormancy following the shedding at the time of brooding, begin growth of new feathers with the first surge of molting activity that follows the nesting season. The woodpeckers that were growing new inner abdominal feathers were in most cases still feeding young outside the nest.

To summarize, the inner abdominal region is composed of a row of feathers intermediate structurally between typical downs and contour feathers. In the definite

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution.

arrangement of the feathers, the region resembles a division of the ventral tract of contour feathers. The homology with feathers of a downy type found on the bellies of passerines is strongly suggested by similarity of position and arrangement, and by the fact that they are lost during brooding. In the matter of time of replacement after brooding, the inner abdominal feathers do not correspond with the annual molt of nearby contour feathers of the belly. They are much more prompt in their re-appearance than are the downs of the bellies of passerines.—ALDEN H. MILLER, *Museum of Vertebrate Zoology, Berkeley, California, January 8, 1933.*

**Nesting of the Crissal Thrasher in Coachella Valley, California.**—A trip was made to the Coachella Valley, Riverside County, on February 12, 1933, in company with Fred Frazer and Rex Parker to see if we could make spring seem nearer by finding some birds busy with nest building. Our quest was rewarded by the finding of three nests of the Crissal Thrasher (*Toxostoma dorsale dorsale*), two of them containing two much incubated eggs each and the third, two eggs and one newly hatched young. The eggs in the latter nest were unquestionably deposited in January and constitute an early nesting date for California. The earliest previous record by me was February 28.

The shallow nests of the Crissal Thrasher are almost invariably placed in mesquite trees or salt bushes and I believe I have never seen one in a cactus. Probably ninety-nine per cent of the large deep nests of the Leconte Thrasher (*Toxostoma lecontei lecontei*) which I have observed have been in cacti.

My records indicate that two or three eggs usually make a complete clutch for the Crissal Thrasher; out of seventy-six nests containing either complete sets or young, I found that forty contained two, thirty-four contained three, and only two contained four eggs. The number in a complete clutch seems to vary from year to year. An examination made in March, 1931, showed twelve nests with two eggs and three with three eggs, while in the corresponding month of last year, in the same locality, there were two nests with two, ten nests with three, and one nest with four eggs.

I have never observed an egg with shell markings. The average weight of over one hundred fresh eggs was 5.05 grams. The sets including the largest and the smallest eggs contained but two eggs each while a set of four had the second largest eggs. The combined weight of the set of four large eggs was 178 per cent greater than of the set containing the two small eggs. The weights (in grams) of the individual eggs in these three sets follow: No. 4049, 5.94, 5.84; no. 1707, 4.09, 4.02; no. 2615, 5.82, 5.75, 5.72, 5.26.—WILSON C. HANNA, *Colton, California, February 20, 1933.*

**Bird Notes from Mount Pinos, California.**—During the past thirty or more years the region of Mount Pinos, lying in Ventura and Kern counties, California, has been visited by many collectors and a knowledge of its avifauna has increased constantly. I made two trips to this locality during the summer of 1932 and obtained some notes which may be of interest. These observations were made in the vicinity of San Emigdio public camp, elevation 5900 feet, at the west end of Cuddy Valley, Kern County.

*Sphyrapicus varius daggetti*. Sierra Nevada Red-breasted Sapsucker. Rather uncommon on the mountain. A male seen June 12, 1932, is my only record for the locality.

*Phainopepla nitens lepida*. Phainopepla. I was surprised on June 12, 1932, to notice a male of this species flying about high among the yellow pines and perching in them. This bird was noticed about a quarter of a mile west of the camp at 6200 feet. It evidently was a straggler from the Mohave Desert via Cuddy Valley.

*Myadestes townsendi*. Townsend Solitaire. Has been noticed only once on Mount Pinos during the summer. On June 8, 1929, Seth Benson noticed a pair at 8000 feet and collected an adult male (Condor, 32, 1930, p. 102). On August 4, 1932, I observed an adult solitaire in the public camp grounds on the edge of the sage belt. The next day, while watching a small band of Clark Nutcrackers close to camp, I discovered an immature solitaire. This bird, a male, was collected. The Mount Pinos region is probably the westernmost breeding ground for the species in southern California.—JAMES STEVENSON, *Berkeley, California, February 11, 1933.*

**Sahuaro Screech Owl in Coachella Valley, California.**—On December 11, 1932, after a long hike back into a small cañon of the Santa Rosa Mountains, about twelve miles southwest of Coachella, my husband called my attention to an object that appeared to be wedged into a small round opening in the perpendicular side of the cañon wall, twelve to fifteen feet above the ground. Observing it closely for several minutes and deciding it was a forked stick resembling an owl, the knot holes like slits of closed eyes, we determined to get it.

Finding toe-holds in the rocks Mr. Clary climbed nearly opposite before there was an almost imperceptible wink to indicate to the observer below that it was in truth a small owl. But just as his hand was about to close over it this small owl, robin size, which we took to be the Sahuaro Screech Owl (*Otus asio gilmani*) slipped out of the crevice and made its unhurried flight down the cañon to where it turned again into the protective coloring of the rocky cañon wall not over a hundred feet away. The pronounced horns, small size, and pale gray coloring were all distinctive. The owl was seen at close range, and in flight passed within arm's reach, so that the wing pattern was easily discernible. This is the first record of this species made by the writer in this section.—MRS. BEN L. CLARY, Coral Reef Ranch, Coachella, California, January 27, 1933.

**A Grinnell Water-Thrush in Oregon.**—On August 26, 1931, a Grinnell Water-Thrush (*Seiurus noveboracensis notabilis*) was taken from one of the traps of a regularly operated bird-banding station at Beaver, Oregon, sixteen miles south of Tillamook. The trap was of the "clover-leaf" type, baited with rolled barley and cheese trimmings and set on the bank of a small stream, about six feet from the water. The skin was sent to the Museum of Vertebrate Zoology, Berkeley, for identification, where it was examined by Dr. J. Grinnell and Dr. Alden H. Miller, who provisionally referred it to this race, although it is "darker and somewhat smaller than other skins in the Museum collection."

So far as I can ascertain, this species has not been previously recorded from Oregon.—REED W. FERRIS, Beaver, Oregon, January 30, 1933.

**Food of the Pigmy Owl and Goshawk.**—The following observations were made on a place owned by the writer on Hat Creek, in Shasta County, California.

At dusk, on August 18, 1930, the writer was walking toward the creek when something darted past his head, striking a branch of an old dead tree about twenty feet away. It proved to be a California Pigmy Owl (*Glaucidium gnoma californicum*), and when collected it was found to have in its claws, a freshly killed Cassin Purple Finch (*Carpodacus cassinii*), of which the head and part of the entrails had already been eaten.

On the evening of August 25, 1931, an American Goshawk (*Astur atricapillus*) was seen carrying a large mammal which, when the hawk was collected, was found to be a California Gray Squirrel (*Sciurus griseus griseus*). The head and part of the body had already been consumed by the hawk. The Gray Squirrel has been a rare animal in the above locality for many years, but at the present time it seems to be getting established once more.—ERNEST D. CLABAUGH, Berkeley, California, March 9, 1933.

## EDITORIAL NOTES AND NEWS

The eighth annual meeting of the Cooper Ornithological Club has been scheduled for Friday and Saturday, May 5 and 6, at the University of California in Berkeley, with headquarters in the Life Sciences Building. The board of governors will meet on Sunday, May 7. Day-time programs of papers at the annual meetings have come to be, during the past seven years, contributions of high order and provocative of good discussion. To cite one instance, we will long remember George Willett's brief

but well directed remarks on "Logic in Systematics," given last year in Los Angeles. One important aim this year is to make the program even better suited for open discussion and interchange of ideas than heretofore. With these precedents and aims in view, thoughtful planning by contributors will go far to aid the program committee. Shortly, mail request for titles will be sent out. Be forewarned, therefore, and have ready a suitable title to submit. We trust the somewhat earlier date of

meeting this year, compared with that of two years ago in Berkeley, will facilitate attendance. Arrange at once to be in Berkeley on the first week-end of May. Plan also to join in our noon-day and evening social activities and renew fellowships with bird students from distant parts of the State and country.—ALDEN H. MILLER, *General Chairman, University of California, Berkeley.*

There was distributed at the January (26th) Northern Division C.O.C. meeting the first copies of a printed folder entitled "Birds of Lake Merritt and Lakeside Park" [Oakland, California], compiled and issued by the Oakland Ornithological

dents, 20; summer visitants, 11; winter visitants, 61; transients, 19; vagrants, 20; introduced 7. The first "boy" on record to watch birds on and about Lake Merritt was Edward W. Nelson, who, on one day in 1872, identified 28 kinds (see note in *Condor*, 27, 1925, pp. 173-174). The present contribution, of pocket size, on stiff paper, and based on accurate observation over a period of years, is admirably adapted for local popular use. There ought to be available just this sort of list for every population center in the country.—J. G.

The comprehensive study of the Rancho La Brea eagles and vultures by Hilde-



Fig. 17. JOSEPH MAILLIARD (LEFT) AND C. HART MERRIAM (RIGHT), TWO HONORARY COOPER CLUB MEMBERS OF DISTINGUISHED RECORD.

Photograph taken September 7, 1930, by Lawrence V. Compton, at Lagunitas, California.

Club. This is a group of enthusiastic young naturalists working under the guidance of Scoutmaster B. C. Cain, from whom copies of the folder may be obtained at 5 cents each. A total of 138 kinds of birds are listed under current vernacular and authoritative scientific names, with groupings indicated as follows: Permanent resi-

garde Howard (*Carnegie Inst. Wash.*, publ. 129, October, 1932, 82 pages, 29 pls.) might well be designated the outstanding publication of the year dealing with avian paleontology. The problem of assorting and associating as to species the abundant fossil material in the Los Angeles Museum from this locality has demanded a special



mode of handling worth the attention of paleontologists generally. The report recognizes eight forms of eagles, large buteonids, and Old-World vultures present in the deposits, but in addition constitutes a review of all the fossil records of these types in North America. The only new species, a *Urubitinga*, from Hawver Cave, California, is described, perhaps too informally, in the body of the text on page 25. The work is revisionary; family and generic allocations are importantly altered. It is gratifying to see the Rancho La Brea materials, which in quantity frequently outnumber available modern skeletons, continue in the hands of so competent a worker as Miss Howard.—A. H. M.

#### PUBLICATIONS REVIEWED

SIEWERT'S "STÖRCH" AND HEINRICH'S "DER VOGEL SCHNARCH".—Two German nature books have just appeared, differing in subject matter, for one treats of the home life of two native birds, the other of a collecting expedition in the Malay Archipelago; yet they have much in common.

It is seldom that a book combines notable pictures, scientific accuracy, and literary style, yet Horst Siewert's "Störche" has this distinction. A number of his studies have already appeared in the *Journal für Ornithologie*, chiefly on the great birds of prey; he now gives us a book on the home life of the two storks.

The tale of the rare, shy Black Stork that lives in deep forests has a special appeal. From day-long vigils in a blind in a tree top the author learned that the female did most of the incubating, the male taking her place for some hours each morning. When the young were three weeks old, the parents relieved each other in two and a half to four hour shifts, bringing, however, a total of only five meals, two in the early morning and three late in the day. With the White Stork the female incubated all night, but during the day the birds changed places at intervals ranging from one to four and a half hours, the male assuming the larger share of the task.

There is not a trace of nature faking nor of anthropomorphism here; on the contrary, instead of glossing over the fact that the Black Storks let one of their babies die of cold and hunger on the rim of the nest, the author uses the incident as an occasion to discuss bird mentality. In connection with the White Storks he

brings up the vexed question whether bird language is uttered with the intention of communication, or is always an expression of emotion. The scientific value of the book is attested by the fact that 16 pages of the observations on *Ciconia nigra* are reprinted in the last *Journal für Ornithologie*.

Too often the object of nature photography appears to be chiefly entertainment; here on the contrary every one of the 80 pictures is significant of some phase in behavior, for Horst Siewert's purpose was primarily that of understanding the life of his subjects.

In "Der Vogel Schnarch", Gerd Heinrich tells of the adventures of himself, his wife and sister-in-law in the high mountains and terrible swamps of Celebes, a two years' expedition which resulted in a rich array of new forms of both birds and mammals for the American Museum of Natural History and the Zoologisches Museum and Zoo of Berlin. With vivid description of the primeval forests and strange birds and beasts, and occasional flashes of humor, the author recounts difficulties and rewards, discouragements and triumphs and the final capture of the two rare rails, *Habroptila wallacei* and *Aramidopsis plateni*—"der Vogel Schnarch." The undaunted courage of all three participants, and their dogged determination to achieve the allotted task, give an example of devotion in the service of science which may well serve as inspiration to the rest of us.

These books, despite their low price, are masterpieces, each in its own phase of bird study.—MARGARET M. NICE.

THE BIRDS OF NEWFOUNDLAND LABRADOR.—This work of Austin's appeals to the reviewer as much more than a regional annotated list, especially in that considerable emphasis is placed upon the origin and history of Holarctic avifaunas. In treating of the Newfoundland Labrador avifauna as a whole, which is comprised of 177 species and subspecies, interesting and useful nominal lists of various groups of species are given, such as: species of uncertain status, species classified as

<sup>1</sup> 1932. Berlin: Dietrich Reimer; 208 pp., 80 pls. 4.80 RM.

<sup>2</sup> 1932. Berlin: Dietrich Reimer; 200 pp. 69 pls. 4.80 RM.

<sup>3</sup> The Birds of Newfoundland Labrador, by Oliver Luther Austin, Jr. Memoirs of the Nuttall Ornithological Club, No. VII. Cambridge, Massachusetts, published by the Club. September, 1932 (received here, November 21, 1932); 299 pp., with 2 maps, index and bibliography.



casuals, American species of circumpolar genera, solely Nearctic genera, and circumpolar species. Of the 118 species of established and regular status, 46.5 per cent are considered to be of boreal origin and are Holarctic in distribution; 21.2 per cent are of boreal origin and Nearctic distribution; 21.2 per cent are of southern origin and Nearctic distribution; pelagic forms make up the remaining percentages.

The comments upon the probable origin of local subspecies in relation to Pleistocene climate are worth serious reading. This subject, being fraught with many deficiencies in basic data, can not but remain controversial. Although readers may not concur with Austin in all phases of his discussion, they must admit, I think, that his statements are well-considered contributions to current thought in this field. Comments under each species summarize the entire distribution of the species and often give some indication of the distribution of related species of the genus, or even of related genera. In so doing the author places the Labrador occurrences in proper perspective in a cosmopolitan picture.

The treatment under species in the main list gives, as synonyms, local vernacular, Eskimo and Indian names where these are known. The records of occurrences are well detailed, together with concise summarizations of regional distribution. All published data and much information from unpublished sources are added to the author's personal field experiences gained during three summer expeditions. Aside from purely distributional records, seemingly all notes, published or otherwise, pertaining to the region and relating to nesting, migration, habitat and food are reviewed. The extent to which this information is new or valuably compiled is impressed upon the reviewer in the case of the Northern Shrike, to take an example. The scarcity of authentic breeding records east of the Hudson Bay has been such that some persons in conversation with me have queried the existence of any real breeding population of this species in that area. Although Austin says the Northern Shrike is uncommon, he cites no less than ten specific summer-season localities and mentions four sets of eggs, indicating thereby regular status as a summer resident in the coastal section of Labrador.

Little space is devoted to systematic comment, but some important notations are made regarding subspecies, especially

in the genera *Lagopus*, *Picoides*, *Perisoreus*, *Pinicola*, and *Passerculus*. These comments often are rather curt. They very possibly represent considerable study, yet fail in the written version to detail adequately the reasons lying back of decisions as to validity of races. Such renditions of opinion are objectionable even on the part of persons much versed in systematic matters. This style of treatment is exemplified in the following statement: "I have not seen any material of *L. [agopus]*. *l. [agopus]*. *alascensis* Swarth, but it strikes me that he has not used any of the eastern Siberian races for comparison, and his measurements are too few in number to be a good criterion. Shades of color in breeding dress vary greatly in individuals from the same locality, and while the race may in the future prove to be perfectly good, there does not seem to me to be sufficient evidence at present to warrant its establishment. The same is true of *ungavus* and *albus* (specimens of these two races were examined)."

Most exhaustively dealt with of all species is *Perisoreus canadensis*. The author doubtless is entirely correct in his remarks about certain eastern races, but the distribution of the race *capitalis* north to the Yukon as indicated on the map on page 159 can not be regarded as anything but faulty by those who have examined series of *P. c. canadensis* from various points in central and northern British Columbia.

Systematic comment, however, is not the principal aim of the book. As a chapter in the study of boreal faunas, as a compilation of information on the birds of a circumscribed region, and as an account of a fascinating piece of ornithological exploration, the book should receive much commendation and appreciation.—ALDEN H. MILLER, December 12, 1932.

#### MINUTES OF COOPER CLUB MEETINGS

##### NORTHERN DIVISION

DECEMBER.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, December 22, 1932, at 8:00 p. m. in Room 2003 Life Sciences Building, Berkeley, with about sixty members and guests present and Dr. Linsdale in the Chair. Minutes of the Northern Division for November were read and approved. Minutes of the Southern Division for Novem-

ber were read. Glen Vargas, Route 3, Hayward, California, was proposed for membership in the Club by W. Otto Emerson, and James L. Ashley, 2500 Frances St., Oakland, California, by Alden H. Miller. The Chair announced the appointment of the following members as a committee to present nominations of officers for the Northern Division for 1933. Flora A. Randolph, L. Ph. Bolander, Joseph Grinnell.

Dr. Loye Miller of Los Angeles, President of the Board of Governors, was present and announced that it was his pleasant duty to call the Eighth Annual Meeting of the Club, to be held in Berkeley in the spring of 1933. The committee on arrangements designated by Dr. Miller consists of Mrs. James T. Allen, J. Grinnell, J. O. Stevenson, T. I. Storer, H. S. Swarth, and Alden H. Miller, Chairman.

Mr. Grinnell brought to the attention of the Club, the two-volume book "Birds of Minnesota" by Dr. T. S. Roberts and commented upon it as the most important American contribution to ornithology for 1932. He added that this set of abundantly illustrated volumes may be obtained from the University of Minnesota at the very moderate price of \$6.00.

Mr. Cain told of Mr. Brock having seen a male Snow Bunting in good plumage on Broadway Terrace, Oakland, in mid-December. Mr. Tonkin reported several Emperor Geese seen on Tule Lake in November and the possession of one specimen taken there at that time. Two Sand Grouse, according to Mr. Grinnell, may now be seen at the State Game Farm at Yountville. These oriental birds, of the pigeon tribe, are desert dwellers and have feathered feet, an aid to sand walking.

Mr. H. S. Swarth of the California Academy of Sciences was the speaker of the evening and gave an illustrated talk on the birds of the Galapagos Islands, as observed by him when a member of the Templeton Crocker Expedition of the Academy, which visited those islands in the spring of 1932. The expedition brought back an interesting collection of specimens, photographs, notes and impressions, the latter being generously shared by Mr. Swarth with his appreciative listeners.

Adjourned.—HILDA W. GRINNELL, *Secretary*.

#### SOUTHERN DIVISION

NOVEMBER.—The regular monthly meeting of the Southern Division of the

Cooper Ornithological Club was held Tuesday, November 29, 1932, at 8:00 p. m., in the Los Angeles Museum, Exposition Park, Los Angeles, with President Michener in the Chair and about 75 members and guests present. Minutes of the Northern Division were read; minutes of the Southern Division were read and approved. Mr. William Todd Helmuth 3d, 667 Madison Ave., New York, N. Y., was proposed for membership by W. Lee Chambers.

Dr. Loye Miller reported on a new fossil horizon appearing in diatomaceous deposits at Lompoc as indicated by Albartross remains, and stated that the age was not as yet known. Dr. Bishop mentioned the disappearance of Spotted Doves from his vicinity, attributing the fact to depredations by human marauders working at night. He also described an albino Brewer Blackbird. Mr. Michener told of having seen last year several California Jays which were pale and undercolored. Mr. John McB. Robertson reported the presence of a female Black-headed Grosbeak in October, and Dr. Miller stated that he had seen one at Thanksgiving. Mr. Partin told of having found Marsh Hawks fairly common in Imperial Valley and Mr. Jack Robins of finding Ruby-crowned Kinglets in the Chocolate Mountains.

The speakers for the evening were Mr. A. J. van Rossem and Mr. and Mrs. Michael. Mr. van Rossem showed many of the Donald R. Dickey slides, and the Michaels told of their work in Yosemite, and showed their excellent films.

Adjourned.—R. B. COWLES, *Secretary*.

DECEMBER.—The regular monthly meeting of the Cooper Ornithological Club was held Tuesday, December 27, at 8:00 p. m. in the Los Angeles Museum, Exposition Park, Los Angeles, with President Michener in the Chair and 9 members present. Minutes of the Southern Division were read and approved; minutes of the Northern Division were read. The name of David Duncan III, 75 Spencer Ave. Sausalito, California, was proposed for membership by J. McB. Robertson. President Michener appointed W. Lee Chambers, Loye Miller, and George Cantwell as a nominations committee to prepare a slate of officers for the year 1933, to be voted upon at the January meeting.

The meeting was then adjourned in order to examine some of the specimens forwarded from Guatemala by Mr. George Willett.—R. B. COWLES, *Secretary*.

